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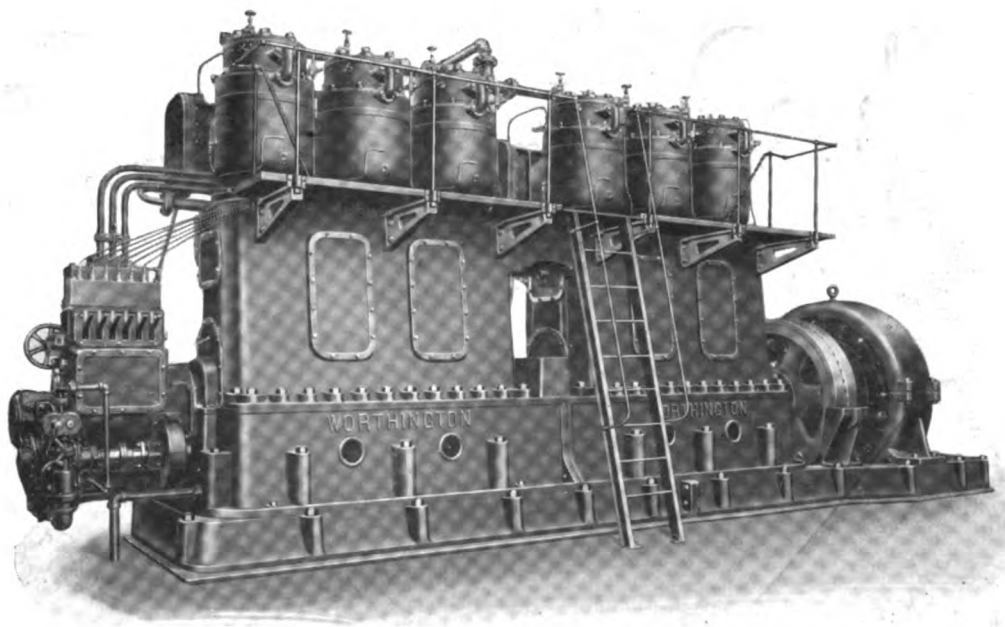
## Worthington Diesels drive Generators on new Ford Ships

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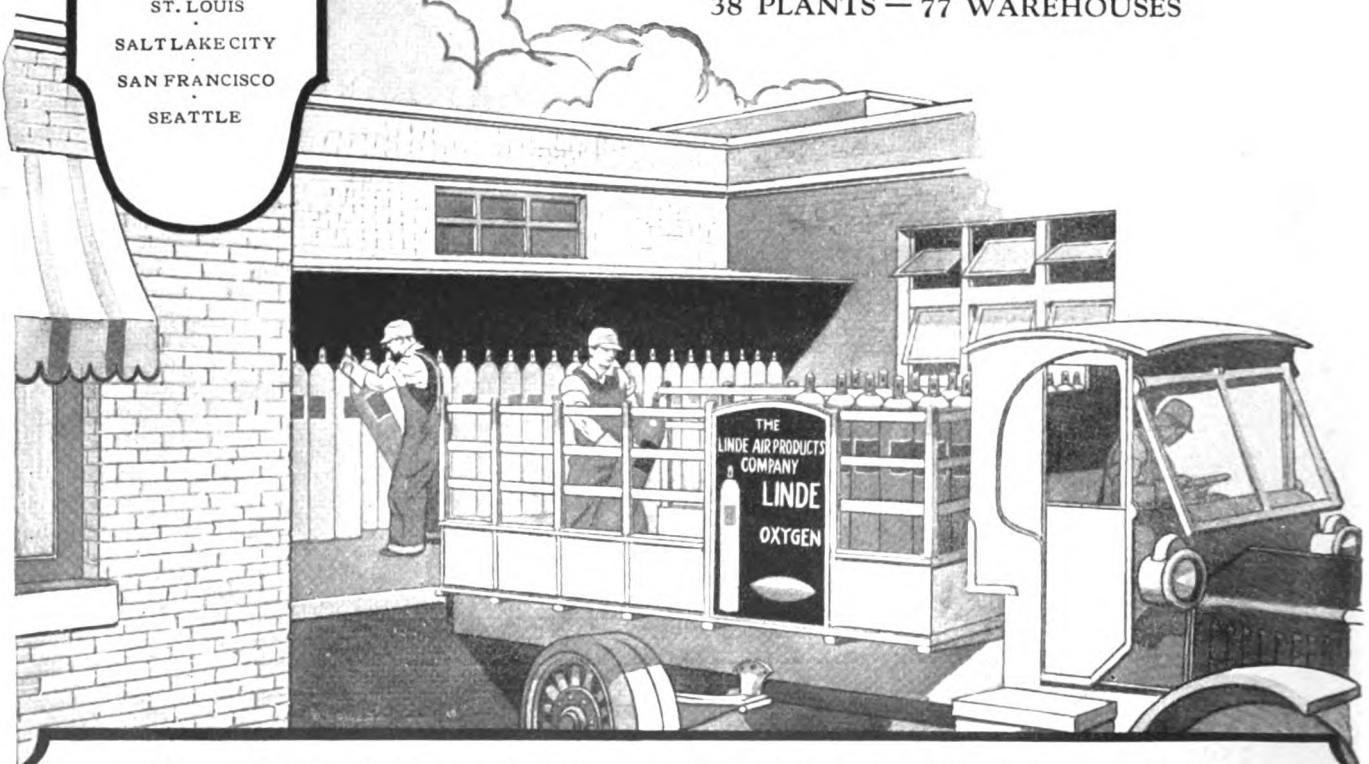


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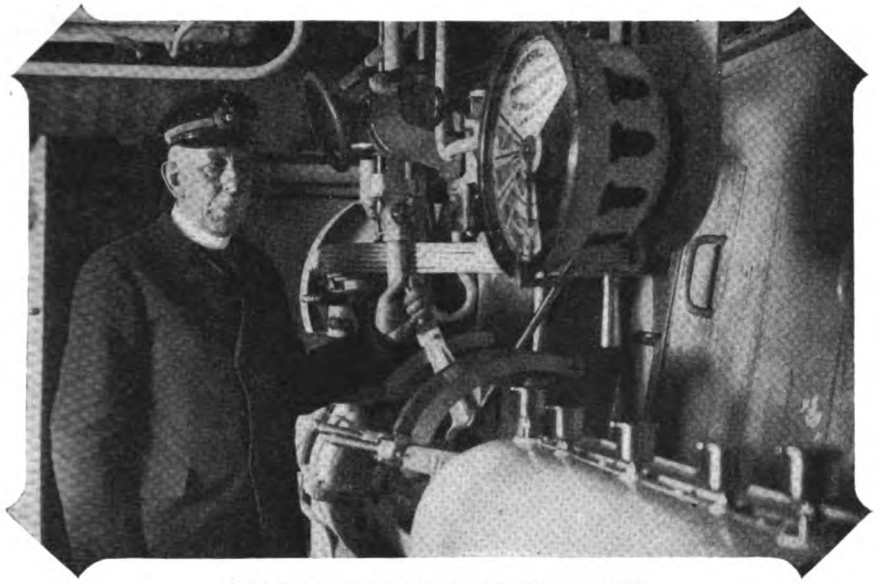

GOOD SHIPS NEED GOOD ENGINEERS


# Marine Review

R. V. SAWHILL
*Editor*

July 1924


# Must Train Men for Motorships

BY A. H. JANSSON

THE quality of the men in the engine room of oil engined ships is certain to be a deciding factor in their successful operation in the peaceful though none the less active competition now under way for a share in the ocean carrying trade of the world. A poorly trained and dispirited personnel will ruin the best mechanical equipment and invite disaster. All indications at present are that America will in the near future have a considerable fleet of oil engined vessels. What is being done to prepare trained engineers to operate these ships? The specific object of the present article is to call attention to the immediate necessity for such training, keeping in mind the old adage, "A little knowledge is a dangerous thing." Before going into the details of this subject it may be well to give a short review of the present and future status of this type of ship in the merchant marine.

### U. S. Ranks Third

It cannot be stressed too strongly or too often that it will soon be utterly impossible for America to compete in the ocean carrying trade unless definite, practical action is taken to acquire an adequate fleet of oil engined vessels. In number and total gross tonnage of oil engined vessels 500 gross tons and over on June 30, 1923, the United States held third rank, with 69 vessels of 151,540 gross tons; Great Britain and Norway being respectively first and second. With some 25 vessels added to this list in the past year, the chances are the United States is now second only to Great Britain in the number and aggregate tonnage of oil engined ships.

This is, however, somewhat misleading as the great majority of these ships are small and were built for special industrial purposes, such as the transportation of oil and other commodities in domestic commerce along the coast, on bays and rivers. From an analysis of the records of June 30, 1923 of oil engined vessels the average gross tonnage per vessel under different flags is as follows: British 4400, Danish 4150, Swedish 3570, Norwegian 2460 and American 2200. Judging from the large proportion of small tankers of about 1200 gross tons and other specialized trade vessels of small tonnage contracted for and completed since this time, the average size of oil engined vessels under the American flag has probably not increased while the building programs for this type of vessel in other countries, particularly in Great Britain, clearly indicates an increase in average size.

It is, therefore, clear that the only reason the United States is not hopelessly behind in the application of oil engines as motive power in marine transportation is because of its own domestic needs and the commendable progressiveness of a few large companies. There is in this American fleet only a small number of fair sized ocean going freighters and tankers comparable in every respect to the best oil engined vessels of foreign countries. These few ships have so completely demonstrated their worth and economic superiority that all intelligent and informed American steamship owners and operators are now unanimous in their conviction that an adequate number of additional vessels of this type must be acquired if they are to meet foreign competition on anything like an equal footing. The United States government has emphatically supported this stand by recent favorable action on the part of congress with respect to a bill authorizing the shipping board to use money from the construction loan fund for the conversion of a number of its steam vessels to oil engine drive and to advance loans under proper guarantees to private owners and builders for such conversion. This act should add in due course a number of this much needed type of vessel to the American merchant marine and so help to offset the advantage now held in this respect by the leading foreign maritime nations.

### Study of Possible Economies

Certainly no owner or operator engaged in the ocean carrying trade could at once replace all of his steamships with oil engined ships. It is just as obvious, however, that no owner or operator can longer neglect carefully to study each trade route in which his ships are engaged for the purpose of establishing the advisability of such replacements. Complete voyage accounts showing all income and all disbursements analyzed and segregated into items including crew's wages, fuel,



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repairs, interest on capital cost and depreciation, would make it possible to give an accurate and intelligent forecast of the saving which would result if any particular steamship is replaced or converted.

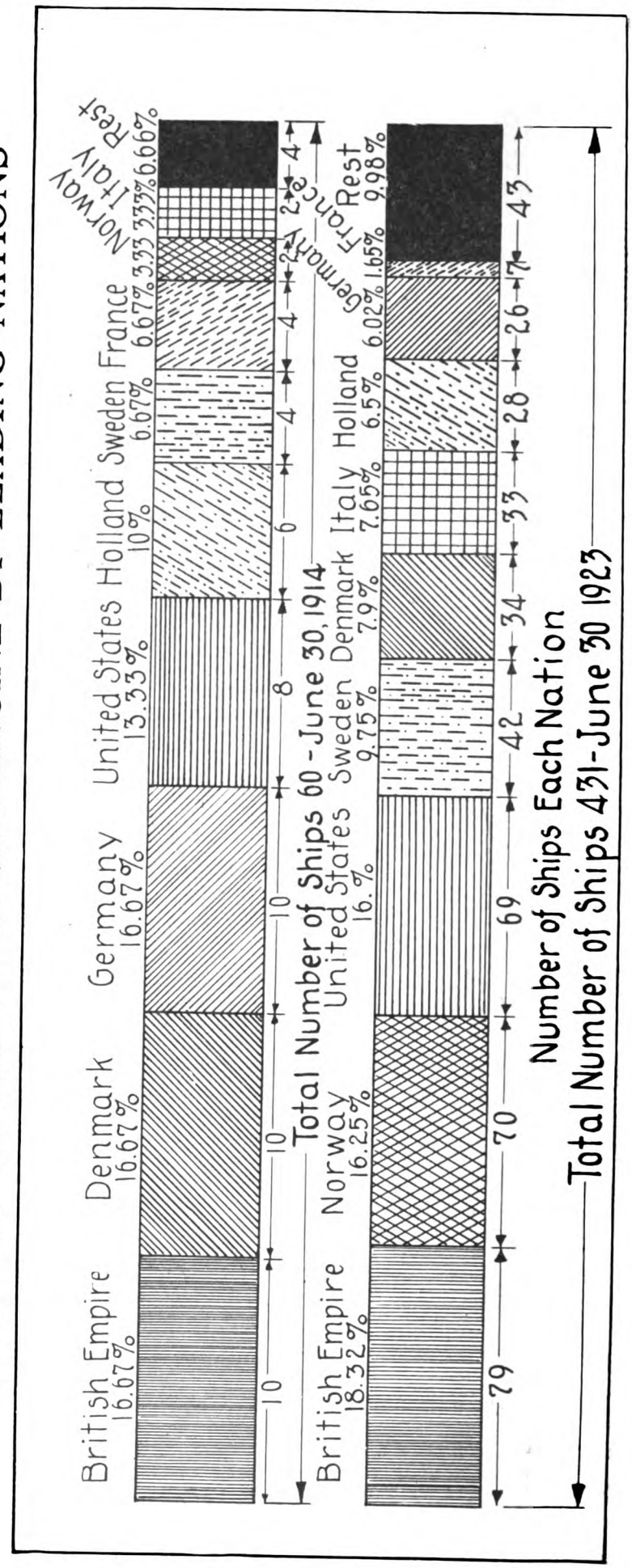
Direct competition with ships of this type in any particular route would also be an important factor in deciding on the replacement of one or more of the steamships or in placing in service additional vessels with oil engine drive. This would be in the nature of meeting the lead of a progressive competitor. It would of course be more effective if action along this line were taken, before it was impera-

**Progress by leading maritime nations in adopting the diesel engine in the past nine years, is shown by these charts. The upper graph in each chart shows the situation on June 30, 1914; the lower graph shows conditions on June 30, 1923, the latest official figures available. As illustrating the service of these charts, they show that the United States on June 30, 1914 owned 8 of the 60 motorships in the world, or 13.33 per cent. In tonnage, this country owned 10,316 of the world's total of 194,019 gross tons, or only 5.3 per cent. On June 30, 1923, the United States owned 69 of the world's 431 motorships or 16 per cent. The tonnage of American motorships was 151,540 out of the world's total of 1,248,158 gross tons, or 12.14 per cent.**

tive to meet competition, solely on account of the direct saving in operating costs, on the principle of General Forrest's famous maxim for success, "Git there fust with the mostest men." Such detailed study and survey of each individual route somewhat as outlined above has presumably been carried out by all careful operators.

The success of the operating department of any line must be measured by the cost and the quality of service rendered by the fleet under its charge. To reduce cost and increase the quality of the service, the manager of operations must have economical ships and careful, well trained men to operate them. With the steps under way referred to above the acquisition of the economical ship can be said to be receiving serious attention.

Very little attention, however, has been given so far to that equally important factor in successful operation a trained personnel without which the

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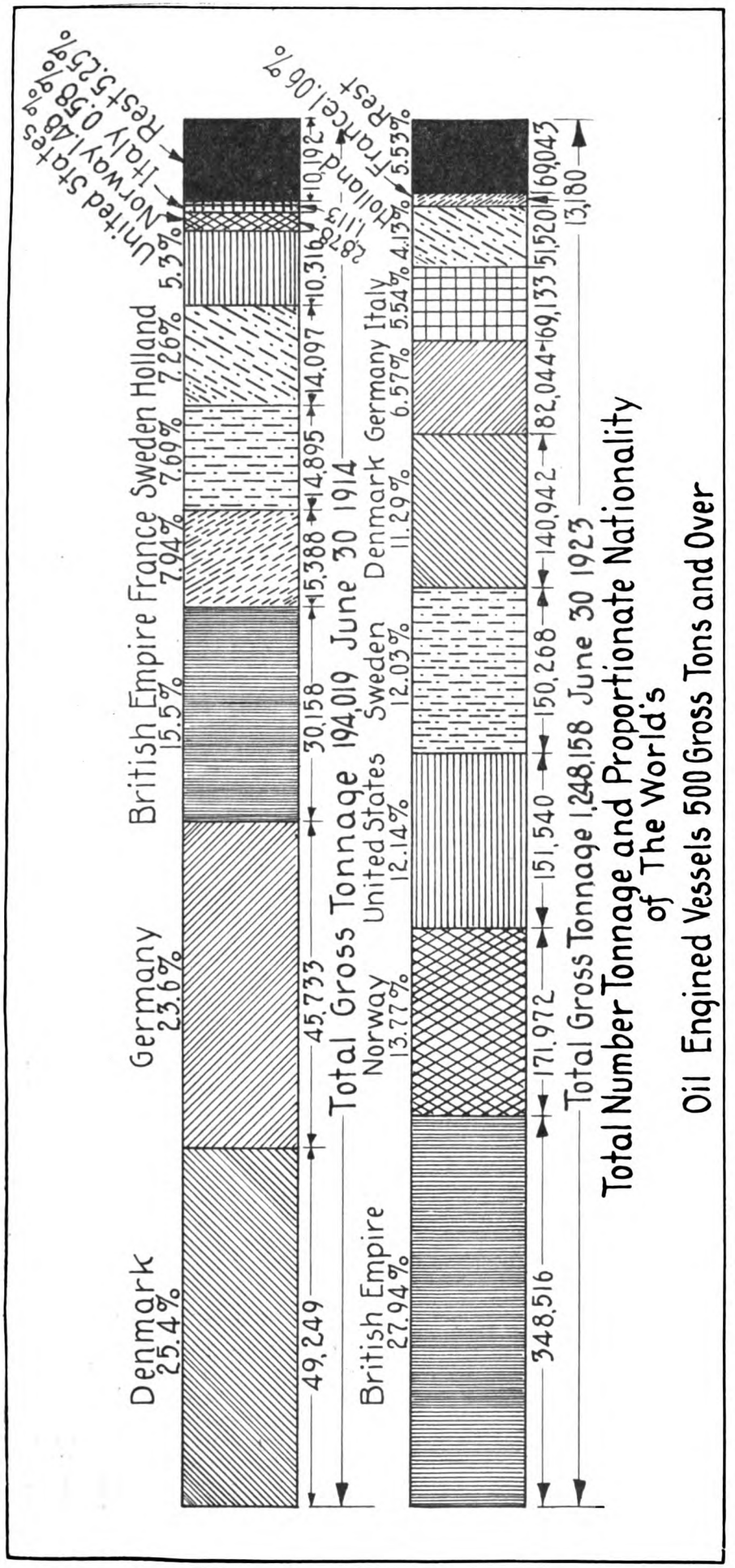


ships are useless. Definite action should be taken at once by both private operators and by the shipping board to provide opportunities for qualified marine steam engineers to obtain the proper kind and amount of experience necessary to qualify them without question in the operation and care of oil engined ships. To carry out most effectively thorough training of engineers, the men themselves, the steamboat inspection service and the owners and operators, must co-operate intelligently and whole heartedly, all recognizing that only such co-operation will build up the American merchant marine.

### Steamboat Inspection Service

All governments have found it necessary to formulate rules and regulations based on laws duly passed, for the supervision of their merchant shipping in order to safeguard lives and property and to insure free and untrammeled action of any ship subject only to a complete regard for the rights of all others. On no other principle are any rules and regulations justified and consequently such rules are of a direct benefit to the owners as well as the men, and will be cheerfully complied with by both in every case where their intentions are honorable and their instincts fair.

In the United States, the board of supervising inspectors prescribes among many other things the qualifications necessary for license in respective grades as deck and engineer officers. In Great Britain, the board of trade issues the rules covering examinations for deck and engineer officers. A comparison of the subject matter in the five pages in the general rules and regulations of the board of supervising inspectors covering the issuance of licenses to marine engineers in the American merchant marine, with the complete separate pamphlet of 63 pages covering qualifications and examinations required for licenses as engineer officers in the British merchant marine, issued by the board of trade, provides a startling illustration of the relative efficiency of the control exercised by these two government agencies.

The British requirements are complete, thorough, clearly stated, eminently sensible and insure highly qualified engineers. The methods and subject matter of examinations are the same throughout the country. It is recognized that practical machine shop experience in the building, erection and installation of marine engines supplemented by schooling in fundamental principles, and then actual seagoing experience in the engine room of ships, form the best foundation for all around efficient engineers. These men so trained have a good sense of proportion in regard to the relative importance of all parts of the machinery

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under their care, and are able to guard against abuse. Where unavoidable breakdowns do occur, they are fitted to make permanent or temporary repairs with the skill of the trained mechanic. The minimum requirements for license in the lowest and highest grade of engineers for steam vessels, in the mercantile marine according to British and American rules may be briefly reviewed as follows:

### Compare U. S. and British Rules

Under the American rules, a young man without any previous mechanical training can become a chief engineer with unlimited license for ships trading foreign at the age of 22, after three years as a fireman and 1 year as first assistant. This is possible according to the rules as follows: Under proviso 5 section 41, an applicant is qualified to receive license as a first assistant engineer of steam vessels of 1000 gross tons, after three years as fireman in the engine department of ocean or coastwise vessels. Under proviso 1 section 40, an applicant is qualified to receive license as chief engineer after one year's service as first assistant engineer of ocean or coastwise vessels. No limitation as to the size of the vessel on which he has served as first assistant is mentioned. However, it is only fair to say in this connection that the last paragraph in the general section 39 states that inspectors may designate upon the certificate of any chief or assistant engineer, the tonnage of the vessel upon which he may act. It is, of course, possible that under above conditions this authority might be invoked to limit such a chief's license to a certain tonnage.

Probably the more normal procedure would be as follows, without any practical shop experience: After three years as a fireman and on reaching his twenty-first birthday he can become a third assistant engineer; after one year in active service in this grade, at the age of 22, he can become a second assistant engineer; and at the age of 23, a first assistant engineer, and at 24 after a year's active service in each of the lower grades, he can become a chief engineer with unlimited license. The only educational requirements are that he shall be able to read and write and understand the plain rules of arithmetic and specifically that he shall be able to calculate the weight necessary to be placed on the lever of a safety valve to withstand any given pressure of steam in the boiler or to calculate the strain on staybolts in a boiler with a given pressure of steam.

According to the British board of trade requirements, a young man desiring to become a licensed engineer in the mercantile marine must first spend four years in shops, in building, repairing and erecting marine engines. During all this time the aspirant knows that he is fitting himself for the engineer service in the merchant marine, and his book learning and drawing room training is all planned with this in view. He is at least 19 years of age when he completes his machine shop and schooling experience, after which he must spend 1½ years at sea at no lower rating than in charge of a watch in the engine department, with an engine of at least 66 nominal horsepower. He is during this time really a junior engineer and at the end of this training and when at least 21 years of age, he is qualified to take the examination for a second class certificate. After a period of 1½ years, while holding the second class certificate and actively engaged in a rating not lower than senior watchkeeper in the engine room of a vessel with not less than 99 nominal horsepower, he is qualified to take the examination for a certificate as first class engineer, which is equivalent to American chief engineer rating. Four years in the shops with schooling thrown in and 3 years at sea, 1½ years while holding a second class certificate in charge of a watch in the engine room of a foreign going vessel, are the minimum practical requirements to obtain a first class certificate. A good standing must also be obtained in written and verbal examinations covering four days or more; on drawing, engineering knowledge, practical mathematics, and practical questions to indicate the extent of his knowledge of all parts and functions of machinery aboard ship.

### Licenses for Oil Ship Engineers

The minimum qualifications for an original certificate as an engineer for a motorship, and qualifications required for motor endorsement of an original steam certificate, for the mercantile marine, both American and British may be tabulated for ready reference as in the accompanying Tables I and II.

Referring to Table I and taking equivalent grades; under the American rules a young man can become a first assistant engineer for motor vessels with a total of four years at sea, two as oiler and one in each grade of third and second assistants in a motor vessel of more than 15 gross tons (which might mean a gasoline engine of 50 horsepower), while under the British rule for an original motor license as second class engineer, he must first have four years of shop experience in the building and erection of marine engines and 1½ years at sea on motor vessels with an engine of at least 373 brake horsepower. Furthermore, the written and verbal examinations cover a complete practical knowledge of the machinery under his care. A much greater discrepancy appears, however, in the requirements for a motor endorsement of the regular steam certificate as between American and British, particularly under the recent amendment to the American rules, as shown in Table II.

Under the amended rules, it is possible for an American motorship to go out with a complement of engineers, not a single one having any shop experience and only one, the chief, with any sea experience on a motor vessel and that only 30 days on any vessel of more than 15 gross tons. The written examination may vary according to the individual ideas of the local inspectors in the various districts. It is usually comparatively simple and elementary in character and is not difficult to pass for any engineer who has read up on the subject for a short time.

On a British motorship, each licensed engineer in the first place would have had 4 years' experience in a marine engine shop, those holding second class licenses would have had at least 9 months' experience at sea on motorships of at least 373 brake horsepower and the chief engineer holding a first class certificate would have had at least 9 months' experience at sea in a motor vessel of at least 560 brake horsepower. Besides, the written and verbal examinations are uniform throughout the land and are rigid and thorough, designed to establish an aspirant's complete practical knowledge not only of internal combustion engines but of marine steam plants, engine room auxiliaries, and the duties and responsibilities of the engineer in connection with the operation and upkeep of his ship. It was considered advisable at the time the British rules were prepared, to make allowances for a greater demand than supply of trained motor engineers to begin with and to afford sufficient time for steam engineers to acquire the experience. Consequently, the board of trade ruled as follows "until Jan. 1, 1924 ordinary certificates will entitle the holder to go to sea in the grades certified as engineers of any vessel in the British mercantile marine. After that date, they will not be available for service on ships propelled by internal combustion engines unless endorsed for the purpose as provided in section 41."

### Change U. S. Rules

One of the first steps therefore in the co-operation referred to above would be for the United States steamboat inspection, service completely to revamp its rules and regulations covering the issuance of engineers' licenses and in particular those for motorships. Plans should be laid now, not for today, but for six years hence and there-

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**TABLE I**

## American and British Qualifications for Engineer's Original Licenses on Ocean Motorships

| | American | | | British | American | British | British |
|---|---|---|---|---|---|---|---|
| Certificate desired | 3rd Asst. | 2nd Asst. | 1st Asst. | 2nd Class | Chief Eng. | 1st Class | 1st Class |
| Age | 21 | 21 | 21 | 21 | 22 | 22 | 22 |
| Certificate held | | 3rd Asst. | 2nd Asst. | | 1st Asst. | 2nd Class (Motor) | 2nd Class (Steam) |
| Position held (motor) | Oiler | 3rd Asst. | 2nd Asst. | Watch-keeper | 1st Asst. | Senior Watchkeeper | Senior Watchkeeper |
| Marine shop, years | None | None | None | 4 | None | | |
| At sea, years | 2 | 1 | 1 | 1½ Motor or (1 yr. motor ½ yr. steam) | 1 | 1½ Motor or (1 yr. motor ½ yr. steam) | 1½ Motor |
| H.P. Engine, Motor | | | | 373 Brake | | 560 Brake | 560 Brake |
| H.P. Engine, Steam | | | | 66 Nominal | | 99 Nominal | |
| Minimum vessel (over 5 gross tons transporting freight or passengers.) | | | | | Over 15 gross tons | | |
| Trade | Any | Any | Any | Ocean | Any | Ocean | Ocean |

after. The new rules could be patterned somewhat along the lines of those prescribed by the board of trade, and certainly, machine shop experience in the building, repair and erection of marine engines should be compulsory. Written and verbal examinations should be thorough, of greater length and uniform throughout the country.

In the meantime, for those now seeking original certificates as engineers for motor vessels, the service required at sea should be on sea going vessels with a definite minimum size of engine. This service should be supplemented by at least three months marine machine shop experience. For motor endorsement of regular steam marine engineers' licenses, a graduated scale of service at sea as oiler, on a fair sized vessel, should be required as qualification for equal grade, say three months for third assistant, six months for second assistant, nine months for first assistant and nine months for chief engineer, with the option of three months of the time in each case in the building, repair and erection of marine oil engines.

### Importance of the Man

No rules and regulations will avail unless the human factor itself is of good quality. That the material to draw from in the United States is just as high grade as anywhere in the world, can not be questioned but the manner of qualifying as a seagoing licensed engineer is not thorough and consequently the finished product suffers by comparison. Instead of drifting into the occupation of a marine engineer, which is the usual procedure in the United States two things should be done.

1. A sensible course of practical experience combined with proper schooling should be provided in all the best engine plants, repair yards and shipyards where marine engines are built, repaired and installed.

The qualifications for acceptance in such a course should be good character, not less than 15 years of age, and at least the equivalent of a good public grammar school education. Such courses should be self-supporting in that

**TABLE II**

## American and British Qualifications for Motor Endorsements of Steam Certificate

| | American | | | British | American | British |
|---|---|---|---|---|---|---|
| Endorsement Wanted | 3rd Asst. | 2nd Asst. | 1st Asst. | 2nd Class | Chief Eng. | 1st Class |
| Age | 21 | 21 | 21 | 21 | 22 | 22¾ |
| Certificate held, steam | 3rd Asst. | 2nd Asst. | 1st Asst. | | Chief Eng. | 1st class or 2nd class or 2nd class, motor |
| Position held (motor) | Oiler | Oiler | Oiler | Watchkeeper | Oiler | Senior Watch-keeper |
| At sea, months | 3 or | 3 or | 3 or | 9 | 3 or | 9 |
| Marine shop (motor), months | 3 | 3 | 3 | | 3 | |
| H.P. engine, motor | | | | 373 Brake | | 560 Brake |
| Minimum size vessel (over 15 gross tons Transporting Freight or Passengers | | | | | (over 15 gross tons) | |
| Trade | Any | Any | Any | Ocean | Any | Ocean |

**AMENDMENT**—March 4, 1924 (Endorsement for Motor License)

AMERICAN

| | | | | | | |
|---|---|---|---|---|---|---|
| Endorsement Wanted | 3rd Asst. | 2nd Asst. | 2nd Asst. | 1st Asst. | 1st Asst. | Chief Eng. |
| Certificate held, steam | 2nd Asst. | 1st Asst. | 2nd Asst. | Chief Eng. | 1st Asst. | Chief Eng. |
| Position held, steam | 2nd Asst. | 1st Asst. | | Chief Eng. | | |
| Position held, motor | | | 3rd Asst. | | 2nd Asst. | 1st Asst. |
| At sea, months | 3 | 3 | 1 | 3 | 1 | 1 |
| Marine shop | None | None | None | None | None | None |

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the work done by the apprentices would offset to the plant the living wages and the schooling afforded.

2. The pay and perquisites of the grade of chief engineer should be increased so that the standing and prestige of the office would be commensurate with the skill, knowledge and responsibility required properly to carry out its duties and also so that this grade would serve as a dignified and worth while goal for junior engineers to work to. The cost to the shipowners for thoroughly trained conscientious men of good character as chief engineers would be returned to them many times over by the direct saving in operating and upkeep costs.

Under present conditions marine steam engineers recognizing the growing use of oil engined ships will serve their own best interests by taking steps to obtain practical experience by signing on as oilers on such ships or by going to work as mechanics or mechanics' helpers in shops where such engines are built. Their own reputation is likely to suffer if, under the present amended rules and regulations of the steamboat inspection service, they accept positions as engineers on oil engined ships with merely the elementary technical knowledge required by the examinations for licenses, and without any practical experience. Eagerness to learn and serious attention to business can not be denied, and any engineer showing these qualities can or will find the opportunity of making himself competently familiar with new developments in main drive, and with auxiliaries of oil engined ships.

Certainly no licensed marine engineer should voluntarily accept the responsibilities of licensed grade in the engine room of a ship with a type of machinery about which he has only an elementary book learning unless in an emergency when of course it is up to him to carry on to the best of his ability.

### Duty of Shipowners And Operators

The responsibility and the practical opportunities to develop a sufficient number of adequately trained engineers for efficient and careful operation of the comparatively rapidly growing fleet of oil engined vessels in the merchant marine, lies with the ship owners and operators. Every owner and operator should take particular care to get the very best trained men for engineers for the motorships of their own fleet. If they are not at present operating any motorships but have in prospect acquiring such ships they should make careful preparation for their operation by training some of their own best steam engineers.

One of the largest marine transportation companies in America is handling the question in a cool, calm unhurried manner laying the foundations for future successful operation by detailing a certain number of its best steam engineers for duty for a period of three months or so, as observers on its oil engined ships after which period of sea service these engineers are sent for an equal period of time to the plants where the engines are being built. These men are in receipt during all this time of the pay and allowance of their grade in steam. There is not the slightest philanthropy attached to this action, as the management of the company, fully realizing the danger of inexperienced operation, knows that the loss in the case of one ship on a single voyage might easily be an amount greater than the entire expenditure for such a program of deliberate preparedness.

The lowering of the standards of qualification for licenses as motor engineers recently allowed by the federal authorities can in no conceivable way benefit either the men or the owners and operators. Of what avail is it if men with licenses are readily obtainable unless they are experienced and competent? Under careless, incompetent operation the oil engined ship is likely to receive, though undeservedly, a bad reputation which will tend to retard its immediate and general adoption and so indirectly aid our foreign competitors. The owners and operators can individually demand from any prospective applicant, for a position as engineer on any motorship they may have, proof of sufficient actual experience to make certain that such officer is capable of properly performing the duties of his grade. Furthermore, every conversion job from steam to oil engine and every new oil engined ship contracted for, will be to order and the owner or operator whether private companies or the United States shipping board will know just what ships they are to receive. Under these circumstances it would seem to be only ordinary business prudence to attach two or three engineers to each job so these officers may become thoroughly familiar with the machinery which is to be in their charge when the vessel goes into commission.

The oil engined ship is now equipped to a great extent and will in the future be so equipped hardly without exception with electricity (generated by oil engines) for all auxiliary machinery on board. Where the windlass, steering gear, capstan, all deck winches, the ice machine, bilge and ballast pumps, oil pumps, water cooling pumps, are all operated by electric motors and where the lighting, cooking and heating is also done by electricity, the auxiliary generating sets are of course many times larger than on the ordinary steam vessel with steam auxiliaries. Then there is also the oil engined electric drive ships of which there are a growing number.

### Start Rule Revision Now

It is, therefore, of the utmost importance that all the engineers should be thoroughly familiar with the practical operation of this electrical equipment and that a "practical" electrician, particularly familiar with this type of equipment, should be a member of the engineer officer's staff. So far the steamboat inspection service and the owners have been slow in recognizing the increasing importance of the electrician on board modern ships and the ships to come. A regular licensed grade of electrician engineer is already necessary and the important duties of this office can not much longer be left in the hands of a so-called electrician with a rank a little above that of an oiler or wiper.

For the best interests of an efficiently operated merchant marine, now that all signs point to the conversion or the building of new ships along mechanically economical lines, it would be well if all three parties involved, the steamboat inspection service, the marine engineer and the owners and operators, would at once get together to work out practical qualifications for license as engineers on motorships.

Two set of qualifications would have to be established.

1. A temporary set of qualifications to cover the admission under proper though not impractical conditions of marine steam engineers to licenses to operate oil engined ships.

2. To revamp thoroughly the present rules and regulations governing the licensing of marine engineers, operative for all men taking out original licenses after say, a period of six years following promulgation. The new rules should bear a thoughtful and proper relation to modern progress and changes in marine engineering, all with the view of laying now the foundation on which to build an alive, efficient and up-to-date mercantile marine engineer personnel second to none in the world. With properly trained officers and men in conjunction with efficient ships, American shipping will get business.

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# Big Motorship for Henry Ford--III

## Third Article of Series Describing These Unusual Lake Vessels Tells of Diesel Engines

BY J. C. WORKMAN
*Chief Engineer, American Shipbuilding Co.*

AN EXCELLENT idea of the simplicity of the Doxford heavy oil engine as installed in the motorship HENRY FORD II, building at the Lorain, O., plant of the American Ship Building Co., for the Ford Motor Co., is given by the illustrations on page 278.

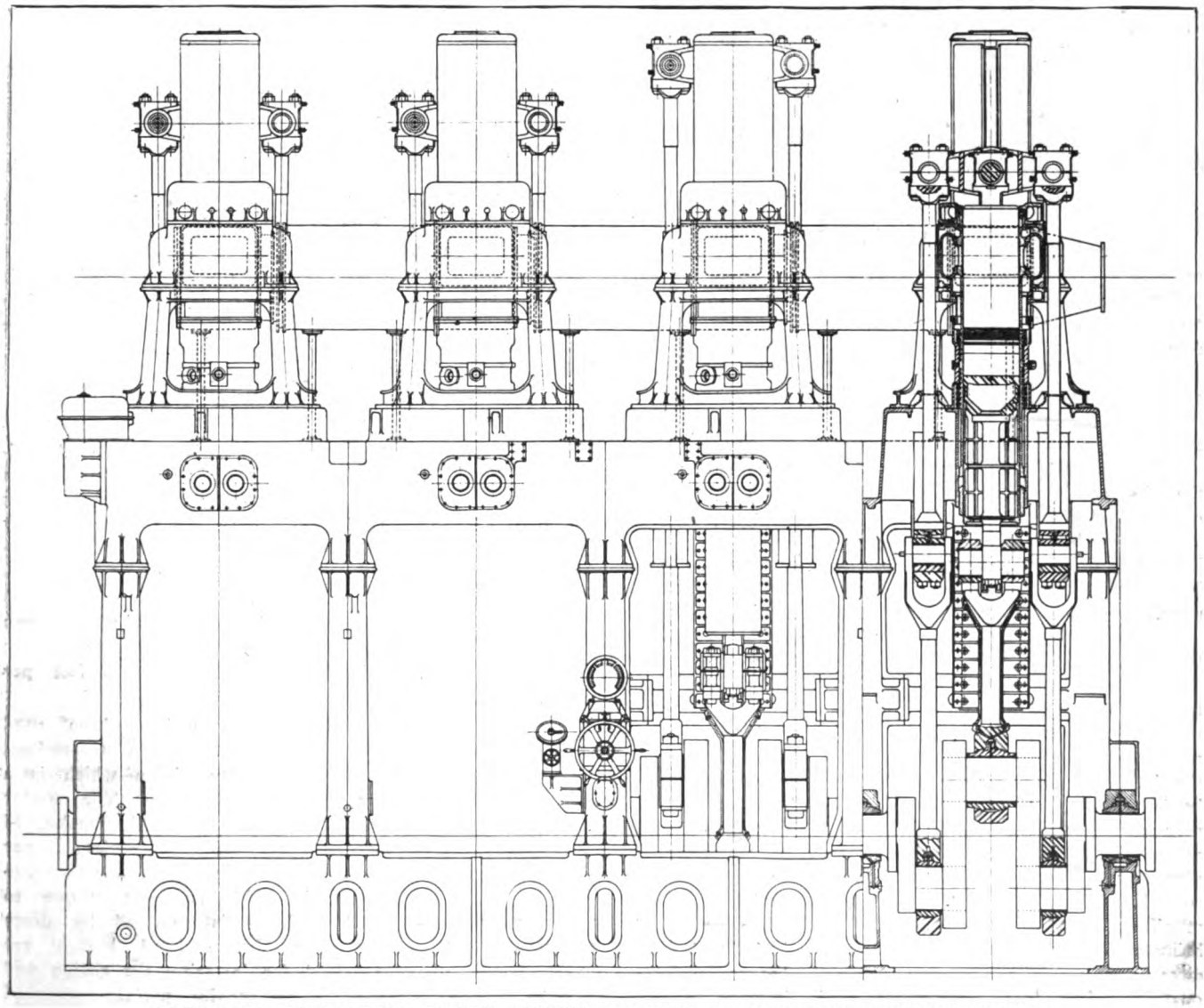
This motor has four cylinders, 23½ inches in diameter × 45½ inches stroke, and will develop 3200-shaft horsepower on 90 revolutions per minute, though the ordinary running is 85 revolutions. The mean effective pressure is about 94 pounds per square inch. The firing sequence from forward to aft is 1-3-2-4.

The two side rods are attached to the upper piston and are always under tension, both in firing and in compression, while the center rod is always under compression. It will be seen that the design is to make the balancing feature of each unit perfect and the shaft practically floats in the bearings. Also, it will be noted that no strain comes on the housings of this engine except to carry the weight.

The main bearings are six in number, 16.92 inches in diameter × 14.96 inches long. The center crank pin is 18.11 inches in diameter × 20.86 inches long. The side pins are 18.11 inches in diameter × 10.89 inches long. The throw of both cranks is 45½ inches. The main pistons are forged steel, with a cast iron skirt attached on the end away from the firing side, each skirt being fitted with two scraper rings.

The distance the upper and lower pistons are apart when in their closest position, is 9.44 inches; thus, close clearances are eliminated. This favorable condition is the result of the high stroke bore ratio adopted.

The independent scavenging blowers, General Electric Co. design, supply 12,000 cubic feet of air per minute at maximum pressure of 2 pounds square inch. An electric turning engine is provided. Hot water circulation through the four jackets of this engine is advised, so a sump tank is located under the engine



ELEVATION OF OPPOSED PISTON, MARINE OIL ENGINE FOR GREAT LAKES MOTORSHIPS



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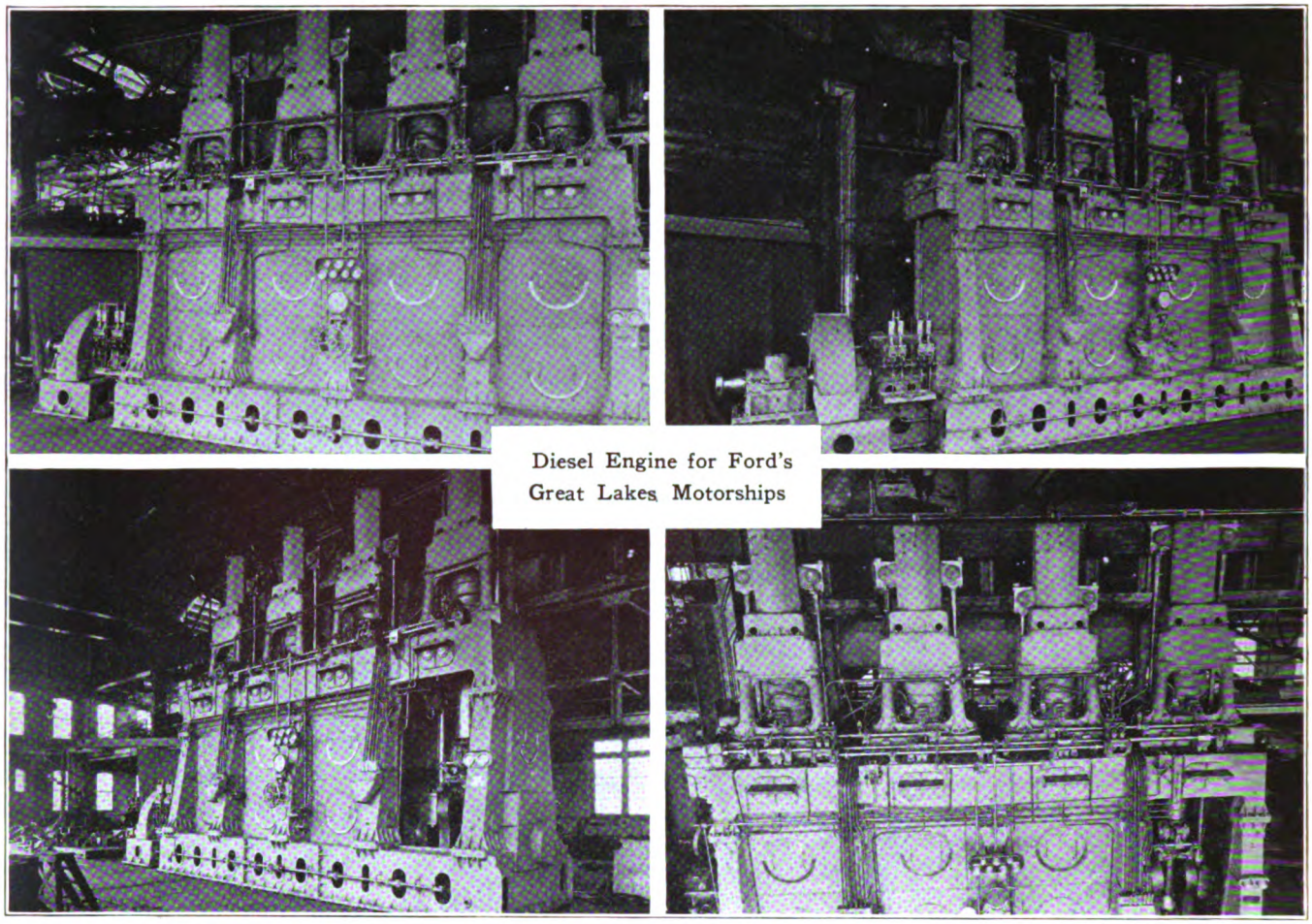

Diesel Engine for Ford's Great Lakes Motorships

room floor, provided with steam coils for this purpose. This water is used continually for circulation, so practically distilled water is available for jacket circulation. Make up is taken from the distilled water system of the ship.

The two Ford steamers are the first of the Doxford type to have independent scavenger blowers. These ships have two, one for spare, each able to supply sufficient air for the scavenging, while the former installations depended on one attached scavenger pump.

The main bearings and crankpin bearing are made spherical, to allow for any inequalization of expansion or adjustment.

The Doxford engine was adopted for the Ford Motor Co. by W. B. Mayo, chief engineer of that company. Advantages claimed for it by the designers are simplicity, reliability and maneuvering advantages. In regard to its simplicity, the builders point out that it has no heads or inlet or exhaust valves; has only one pair of camshafts (for fuel valves) in operation when the main engine is running; uses no air except for reversing; the solid injection fuel type at about 10,000 pounds per square inch being used. The fuel pumps are driven direct from crankshaft and are conspicuous for their absence of glands and springs. The spray is so arranged that it does not come in contact with piston faces or cylinder walls. There is also one independent motor driven fuel pump.

The reversing feature will appeal to Great Lakes engineers. This is effected by ahead and astern cams, the camshaft being moved longitudinally by a *hand* lever. Compressed air is used to start rotation of engine by means of a single hand wheel, located on the center column of engine. Turning this hand wheel, a few points in forward direction, the engine takes the air and starts to rotate; then a few more points and the fuel oil is admitted and engine is in operation. The wheel is turned in the opposite direction for reversing. Another important consideration is that no high pressure joints are broken for examination of pistons.

Speaking for the reliability of this *type* of motor, it is not stretching the truth to say that they are as reliable and safe as the present steam engine now in use on the lakes. This statement is based on the performance of ships that have been in continuous successful operation for a number of years, and is an especially important feature for lake service.

The maneuvering feature is also particularly favorable for lake work as the engines have a range of revolutions from 90 to 15, and can be reversed in about four seconds; are noiseless in operation; are so well balanced that there is no vibration at any number of revolutions.

The ordinary forced feed lubrication is used at 30 pounds per square inch. Two Sharples motor-driven oil separators are used for purifying this oil.

### Motor Driven Windlass

The windlass shown in the illustration, page 279, is of the American Shipbuilding Co. design. It is mounted on a base 8 feet 3½ inches x 10 feet 4-inches. The wildcats are for 2¼-inch cast steel chain. The capacities are as follows: will lift two 8,500 pound anchors with 30 fathoms of chain each 25 feet per minute; one anchor 90 fathoms 25 feet per minute; one anchor 30 fathoms 30 feet per minute.

Cast steel gears have been used with machine cut teeth throughout except the motor pinion which is a nonmetallic composition. The motor is of the Crocker-Wheeler make, 55 horsepower 800 revolutions per minute, crane type with shoe magnetic brake with sufficient torque to hold load. It is operated by drum controller. Large hand brakes are provided for lowering the chains and anchors, all moving parts are bushed by either bronze or white metal. The

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gear ratio is 240:1.

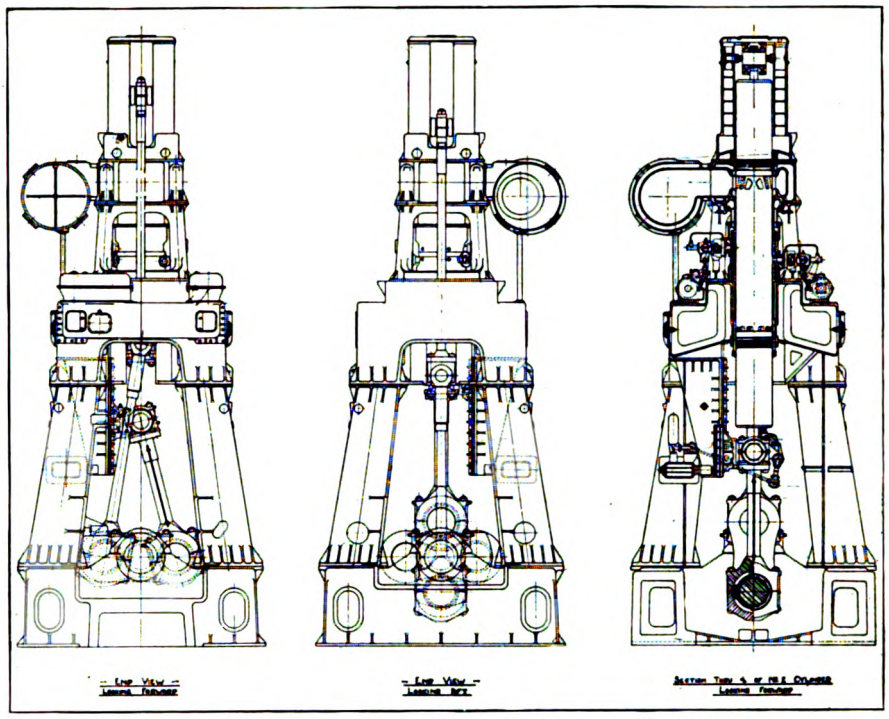
The machined gears are well protected by planished steel guards, nickel-plated trimmings. The windlass is enameled and has nickel-plate finish. The spools are furnished for operating Manila line. Two speeds are provided for operating the windlass.

## What British Are Doing

BRITISH shipbuilders expect to be invited to submit tenders for quite a number of vessels for the Brazilian navy. It is fully recognized that America will be a serious competitor for this work. Brazil proposes to construct a battleship with a displacement of 35,000 tons and a battery of 16-inch guns, a cruiser of 10,000 tons, with a battery of 8-inch guns, five 1200-ton destroyers, 5 ocean-going submarines, an aircraft carrier, a surveying ship, a mine transport, 10 mine layers and 10 mine sweepers. In view of the rather poor state of Brazilian finance, it is well understood that price will have an important bearing on the placing of the orders.

* * *

AMONG the generally depressing reports by shipbuilders, a conspicuous exception is that of Swan, Hunter & Wigham Richardson which made a net profit on the year's trading and has an available dividend of £455,527. In addition to the 4½ per cent debentures, on which interest is paid, a dividend of 8 per cent is to be paid on the company's common shares. Although the tonnage launched from the yards was very small compared with previous years, it was second in the list of shipbuilding returns for the kingdom. In most cases, however, the ships yielded no profit. The directors state that the cost of production is still 70 per cent higher than in 1914, and the demand for new tonnage is consequently small.



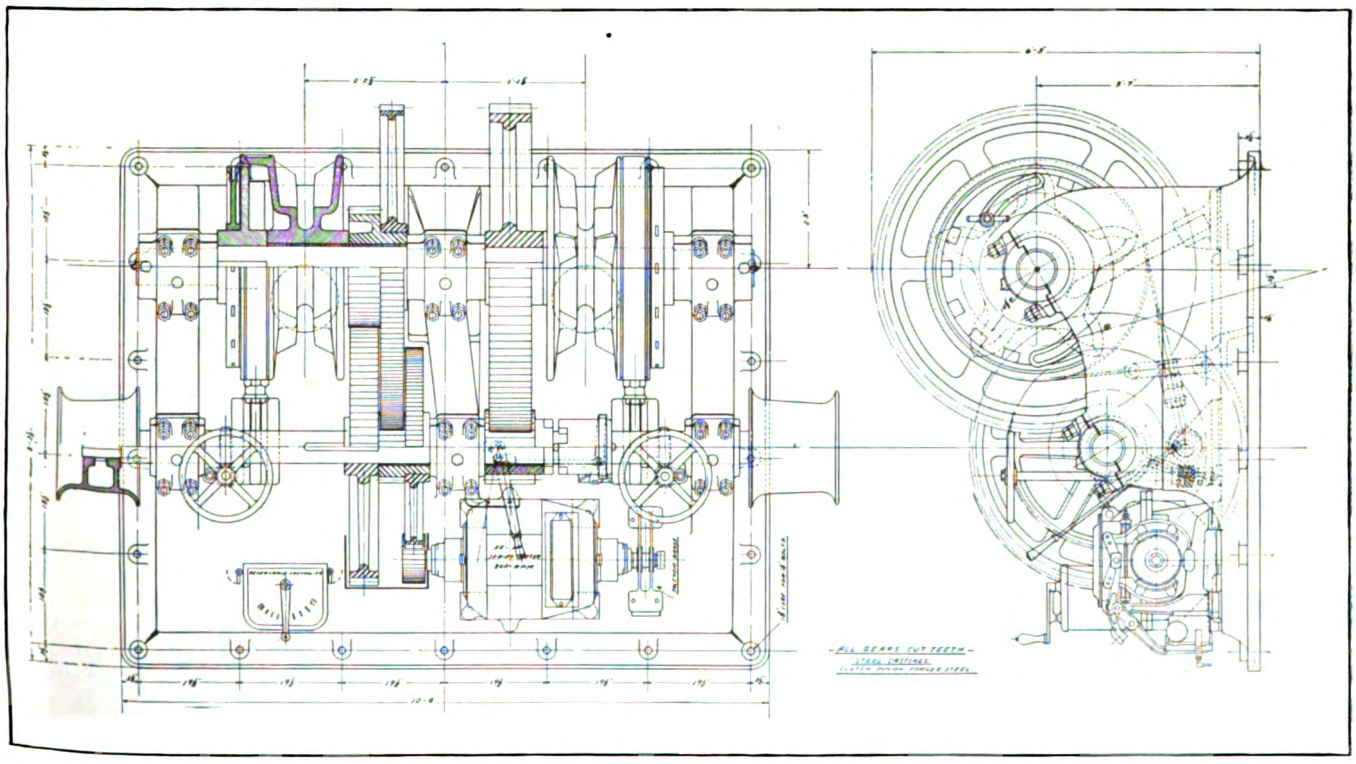
END VIEWS AND SECTION THROUGH CYLINDER

* * *

THE Cardiff & Bristol Channel, Inc., Shipowners' association reported that 20 steamers totaling 23,590 tons deadweight were placed by South Wales firms during last year. Owing to losses sustained, shipowners confined their repairs to what were absolutely necessary. Competition for work was exceedingly keen, while continental yards benefited owing to cheaper labor and depreciated foreign currencies.

* * *

SPEED trials have just been completed of the twin-screw motor yacht NAZ-PERWER, built by Ramage & Ferguson, Leith, for his highness Prince Youssouf Kamal, Cairo.



PLAN AND SIDE ELEVATION OF SPUR-GEARED MOTOR-DRIVEN WINDLASS FOR FORD MOTORSHIPS

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## Inspect New Hudson River Steamer

Completed May 15, 1924, at the Sparrows Point plant of the Bethlehem Shipbuilding Corp., the passenger steamer ALEXANDER HAMILTON, of the Hudson River Day line, immediately entered regular service on the Hudson river.

On June 13, the owners arranged a special inspection trip of this vessel from New York to their own recreation park, Indian Point, on the right bank of the Hudson river, 40 miles from New York. Six hundred guests attended. The return from the park to the 129th street pier in New York City was made in a little over two hours including a stop at Yonkers to discharge passengers.

MARINE REVIEW for March, 1924, carried a complete technical description of the ALEXANDER HAMILTON. In the June issue, a condensed, illustrated description also was given. Her length is 348 feet, beam over all 76 feet and she is licensed to carry 4050 passengers. She is driven by side paddle wheels with feathering paddles and has a diagonally inclined triple expansion engine, with steam supplied by Scotch boilers, burning oil using the Peabody-Fisher type of oil burners. One quite noticeable feature is the entire lack of vibration when the vessel is under way.

For her service, the ALEXANDER HAMILTON is one of the finest vessels afloat. Her wide decks, enclosed saloons, private observation parlors, main dining room, cafeteria and retiring rooms are light, airy, spacious, and outfitted in simple good taste and with every comfort for passengers. A unique decorative feature is a series of painted panels depicting important events in the life of Alexander Hamilton from the time of his birth on the island of Nevis in the West Indies, to the crossing of the Hudson on his way to meet Aaron Burr, at Weehawken, in the duel in which he lost his life. The officers and crew carried out their duties in an orderly and efficient manner and with a fine courtesy, giving all on board a sense of confidence and security.

## Build Oil Engines to Refit Tanker

The Ingersoll-Rand Co., 11 Broadway, New York, is building for the Atlantic Refining Co., the oil engines which will be used in the conversion of a tanker to be named J. W. VAN DYKE. This tanker, which was purchased by the Atlantic Refining Co. from the shipping board, has a deadweight tonnage of 7057 tons; an overall length of 385 feet and, when the conversion is completed, will have a cargo capacity of approximately 60,000 barrels of oil. This vessel, when converted, will be the largest oil engine electric driven tanker, or merchant ship, afloat. The power plant will consist of three Ingersoll-Rand oil engines of the direct-injection type.

Each of the engines is directly connected to a Westinghouse generator. A 2300 horsepower 100 revolutions per minute Westinghouse double armature motor will be used to drive a single screw.

# Work Toward Uniform Shipping Rules

***By Our European Manager***

ONE of the chief results of the second International Shipping conference which was held in London, May 13 to 16, is embodied in a resolution proposed by Signor Palanca of Italy and seconded by Sir William Noble of Great Britain, urging the maritime governments of the world to hold a diplomatic conference to consider the whole question of the safety of passengers and goods at sea. It would be held for the purpose of bringing the rules regarding safety at sea up to date, and it is hoped that it may take place next year.

The following countries were represented at the International Shipping conference in London: United States, Great Britain, Australia, Canada, Belgium, Denmark, France, Germany, Holland, Japan, Norway, Spain, Sweden and Italy. The American delegation included Huntington T. Morse, Capt. W. E. Purdy, G. D. Moore, and Capt. E. E. O'Donnell, representative both of the United States shipping board and private owners.

The work of the conference consisted largely in approving, in the form of resolutions, the efforts of the subcommittees which were appointed at the 1921 conference to investigate certain subjects. The subjects dealt with in this manner included deck cargoes, load line, subdivision of ships, life-saving appliances, taxation of shipping earnings, flag discrimination, uniform tonnage measurement, and immunity of state shipping from the liability attaching to private owned merchant vessels.

Rules have been prepared dealing with deck cargoes, and in some countries government action has been taken. On the question of load line the committee, with the assistance of technical experts, has made definite recommendations, which have been submitted by some governments for the opinion of the classification societies; but no action has been taken. Nor has any government yet adopted the report of the subdivision committee. Useful work has been done by the committee which has reviewed the existing regulations on life-saving appliances and wireless telegraphy and the subject is being examined by the governments of some of the maritime nations. There is urgent need, it is believed, for a fresh diplomatic conference to review the conditions under which wireless methods of communication can be used to the best advantage for life-saving at sea. Stress is laid in the report on the importance of the international adoption of an automatic device for the reception of emergency calls.

Steady progress is being made in securing the acceptance of the principles to be applied in the taxation of the earnings of shipping employed in international trade which were fixed by the conference of 1921. The difficulties arising out of flag discrimination are being dealt with through a convention. The hands of the committees dealing with these and other subjects have been strengthened by the series of resolutions passed at the conference. The principal method adopted to carry these resolutions into effect is to enlist the aid of national shipping organizations, and this policy has in the main been successful. It is thought however, that the national associations might be brought into closer touch than is now the case.

Capt. E. E. O'Donnell of the United States introduced a resolution recommending the calling of an international conference to consider a revision of the rule of the road at sea. No definite action was taken on this resolution but it was agreed that the subject should receive consideration.

In his address to the delegates as chairman of the conference, Sir Alan G. Anderson, president of the Chamber of Shipping of the United Kingdom and one of the principal directors of the Orient Steam Navigation Co., said in part: "Let us be unanimous on one point. The unsinkable ship is a myth if it induces false confidence. A modern ship properly handled does

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not sink unless she hits something harder than water, but if she charges another ship, or a rock or an iceberg, she will sink in spite of bulkheads, load-line, and deck-cargo regulations, and the lives of all on board will be in peril, in spite of lifebelts, rafts, and boats. The one absolute safeguard at sea is a vigilant master; but bulkheads and the other precautions may mitigate disaster and are more likely to prove useful if the regulations which govern them are wisely framed.

"On hull subdivision—one of the most technical of this range of technical subjects—one nation represented on the subcommittee took a different view from the others. The difference, which appears to be due to local conditions in a trade in which the one dissenting nation is especially concerned was fully debated in an international committee and found to be incapable of adjustment. The report on subdivision, therefore, represents the unanimous opinion of all the nations except one.

"The report on deck cargoes illustrates how much spadework must be done before it is possible to claim that even one government is fully informed of the facts. Our committee, representing 12 of our 14 maritime nations, thrashed out the subject and agreed unanimously on the regulations, which would in its opinion, improve safety and decrease cost. These are based on the regulations at present enforced by the Scandinavian countries which specialize in the carriage of deck loads, in preference to the regulations enforced by Great Britain, whose shipowners are chiefly engaged in other trades. The official organizations of seamen in Great Britain shared the view of our committee. The International Labor office at Geneva investigated the same subject in a committee of its joint maritime commission, and approved the suggestions of our committee, but in spite of the unanimous recommendations of the employers and employed persons in favor of the proposed recommendations, the most that we can get from the British government is a promise to submit the matter to another committee, for them to go all over the ground again. If we are right, our proposals would at once increase the safety of life at sea and enable ships to carry larger cargoes, thus tending to lower the price of lumber."

# Unusual Accident Wrecks Dock Crane

BY DON PARTRIDGE

ONE of the heaviest gales and highest winds ever recorded recently hit the north Pacific coast. These winds, combined with high tides prevailing at that time swept the Port of Grays Harbor, Wash., with unusual severity.

Workmen on the docks, before leaving for the night, took extra precautions to make everything fast On one of the docks, two big Colby Steel & Engineering Co., Seattle, hammerhead cranes had been installed for unloading and storing lumber. The operator of crane No. 2, at the outer end and in the more exposed position, fastened the rail clamps securely before leaving. For some reason, crane No. 1, which was about 60 feet from the inner end of the dock, was not securely clamped to the rails. However, the operator swung the boom to a 45 degree angle from the track and dropped the load block to the face of the dock, and the hook-tender wrapped the slings around a 12 x 14 main dock pile-cap, tightened up the line with the hoist and set the brake.

During the night a gale estimated at 90 to 100 miles velocity struck the harbor. Crane No. 2 with rail clamps securely in place, weathered the storm without moving a foot.

The wind coming quarteringly from the ocean caught crane No. 1 and

TWO CRANES ON DOCK AT PORT OF GRAYS HARBOR, ONE OF WHICH CAPSIZED IN A GALE

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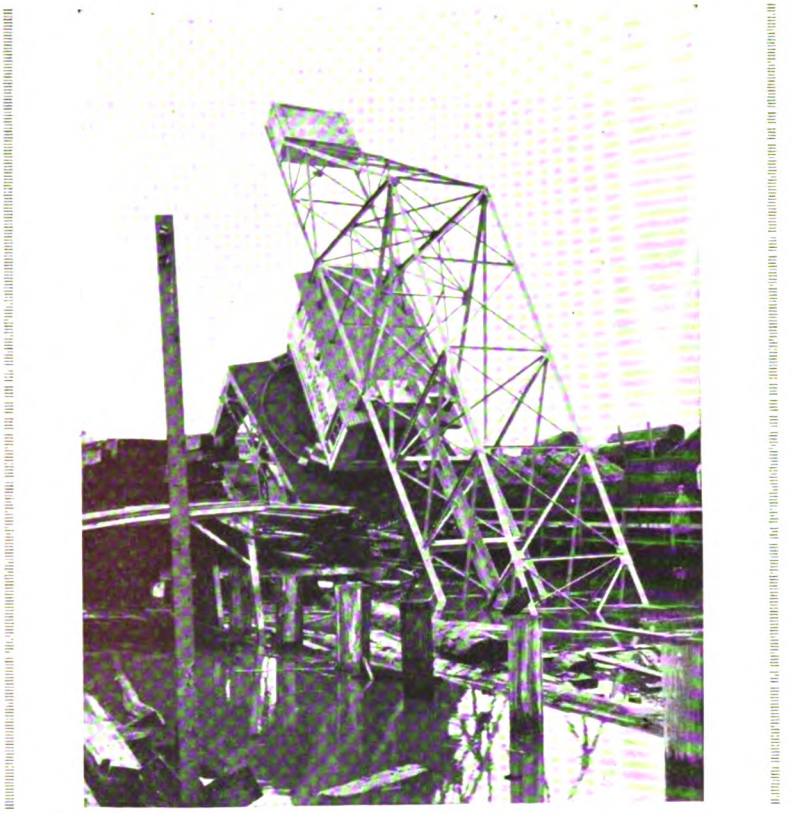
swung it with sufficient force to shear the 12 x 14 pile-cap horizontally, without loosening the bolts which held it to the piles. Then the boom swung parallel with the track—and 225,000 pounds of steel and iron started for the end of the dock, 60 feet away.

At the end of the dock the moving mass struck the heavy timber bumpers, which it carried away, and the crane tipped off the open end, burying its 95-foot boom 40 feet in water and mud and tilting the whole structure to an angle of 45 degrees.

Examination showed that the great weight of the superstructure was supported and held in place by the rotating center and the rear uplift anchors.

What at first seemed to be a tremendous ruin, resolved itself into a salvage problem. To get the crane back on the track, the trucks, still on the tracks, were braced so they would not move and then, by means of ropes—two bridles each with 24 part—lines the whole was brought back to a horizontal position, the boom tip being first burned off at the water line.

When the crane was brought back to a normal position, the only repair was to restore the boom end.



CRANE NO. 1 AT END OF RUNWAY WITH BOOM RESTING ON MUD FLOOR OF HARBOR

# New York Orders Six Ferryboats

WITH the approval of the board of estimate, Grover Whalen, commissioner of the department of plant and structures of the city of New York awarded contracts, on June 13 for six steel steam screw ferryboats, three going to the Tebo Yacht Basin Co., Brooklyn, and three to the Staten Island Shipbuilding Co., Staten Island, N. Y. Each yard is to receive $745,020 for three boats making a total of $1,490,040 for all six boats. Delivery of the first boat from each builder is to be within 180 days from the time the contracts are entered in the city comptroller's office. The remaining boats are to be delivered one from each plant every thirty days after delivery of the first. This should mean if the contracts are recorded at once, the following schedule of deliveries, two boats about Dec. 15, two boats about Jan. 15, 1925, and the final two boats about Feb. 15.

In asking for bids, it was understood that the total cost for six new boats could not exceed $1,508,922.36, all the funds available for this purpose. Bids were requested under the following two headings: first from yards within a radius of 25 miles from St. George, Staten Island; second from yards within a radius of more than 25 miles from the same point. The bids received which came within the limit of the fund prescribed were as follows:

Three boats—Tebo Yacht Basin Co. $745,020.

Six boats—Staten Island S. B. Co. $1,481,000.

Six boats—New York Shipbuilding Co.—$1,323,000.

The New York Shipbuilding Co.'s bid for all six boats was, therefore, $167,040 less than the total of the awards made for three boats to the Tebo Yacht Basin Co., and three boats to the Staten Island Shipbuilding Co. The reasons for making these awards under the circumstances, were presented as follows by Commissioner Whalen to the board of estimate in order to obtain the necessary authority:

"I respectfully submit that it would be contrary to public policy and against the best interests of the city to take out of the city work of such magnitude when it can be done efficiently by citizens of this city. The building of these six ferryboats will require the employment of mechanics whose wages will aggregate $800,000. If this money is expended in this city it will go to taxpayers and rentpayers (who are really taxpayers) and into the channels of local trade and into the city treasury, and it will benefit the people of this city and the city as a corporation. If the work is done elsewhere, this large sum will be lost to the city."

The commissioner also called attention to the reduced cost of supervision of the work if done within the city, and also that the Staten Island Ship Building Co., had agreed to meet the price of the Tebo concern for three boats and to take $745,020, for this number if given the job. He also pointed out the advantages of rivalry between two local yards of high reputation.

With reference to the apparent discrimination against the New York Ship Building Co., one of the officials of the department of plant and structures, stated it was understood when the proposals were asked for, that the city reserved the right to make the awards to the lowest bidders under the first heading, and that the proposals under the second heading were alternate bids to insure rock bottom prices.

The accompanying illustration shows the outboard profile and upper deck plan of the ferryboats. They were designed for the city by M. G. Kindlund, naval architect, and are to be built under special survey to the highest

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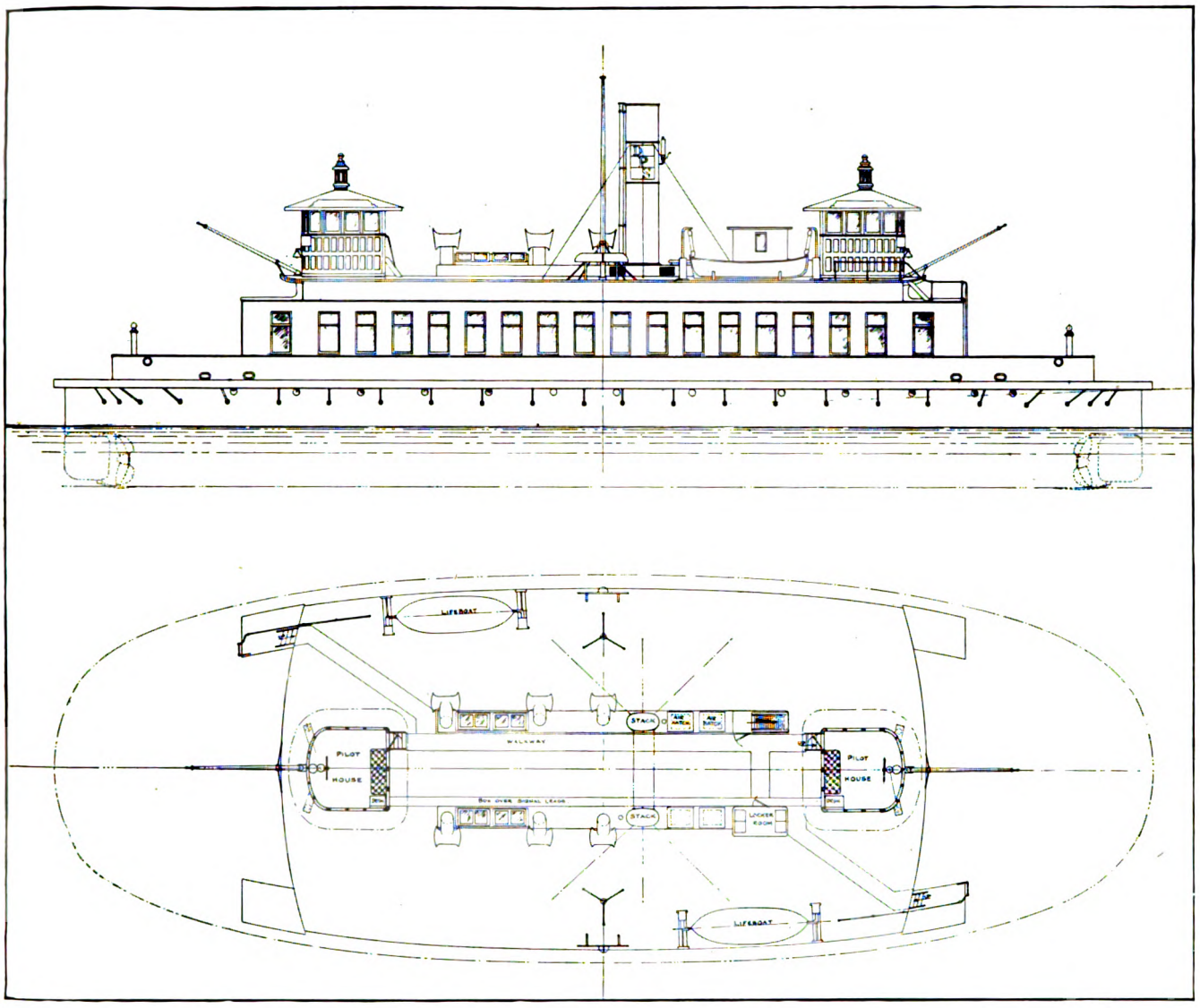


OUTBOARD PROFILE AND UPPER DECK OF NEW YORK'S NEW FERRYBOAT

class in the American Bureau of Shipping, for rivers and harbors. Transverse system of construction will be used. From 15 to 20 vehicles and about 150 passengers will be accommodated in three teamways on the main deck, and in the cabins at the sides. There is nothing unusual about the design. A central shaft, connected to the main engines, coupled together, runs from end to end with propeller at each end. The propellers, of course, turn simultaneously, with the reaction of the thrust of both propellers acting to drive the vessel either way according to the direction of rotation of the engines. Those particulars of hull and machinery which are definitely settled upon and which are not liable to change or modification as the construction progresses are given in the following table:

**HULL PARTICULARS**

Steel—single shaft—propeller each end.

| | ft. | ins. |
|---|---|---|
| Length over guards | 151 | 0 |
| Length over end posts | 148 | 0 |
| Breadth over guards | 53 | 0 |
| Breadth of hull molded | 37 | 6 |
| Depth at center | 15 | 0 |
| Fuel oil capacity, gallons | 9,000 | |
| Fresh water capacity, gallons | 3,000 | |

**MACHINERY PARTICULARS**

**Main Engines**

Two vertical, direct acting, fore and aft compound, steam, coupled together.
Diameter of cylinders, inches ..... 12 and 26
Stroke, length in inches ..... 18

**Main Boilers**

Two Babcock & Wilcox—watertube.
Heating surface of each, sq. ft., about.... 1550
Working steam pressure, pounds per sq. in. 225
Fuel ..... oil
Forced draft.

---

One of the first oil-electric tug boats in the world, the VAN DYKE I, was launched June 7 by the Staten Island Shipbuilding Co., Staten Island, N. Y. This is the first of three oil engine-electric driven tug boats, building for the Atlantic Refining Co., Philadelphia. Each tug boat is equipped with two Ingersoll-Rand oil engines direct-connected to General Electric generators, driving a General Electric motor.

## Recent Sales of Ship Board Vessels

President Palmer of the Fleet corporation has announced the following sale of tonnage:

SHREVEPORT, steel tank steamer, 10,030 deadweight tons, 7277 gross tons, built in 1918, sold for $451,350 to the Cities Service Refining Transport Co., New York.

LAKE AGOMAK, lake type cargo, 3535 deadweight tons, 2339 gross tons, built in 1918, bought for $56,000 by the Baltimore & Carolina Steamship Co., Baltimore.

MIDGET, ex-enemy cargo, 600 deadweight tons, 499 gross tons, built in 1902, bought for $27,500 by Manuel F. Delpan, Manila, P. I.

BURNSIDE, ex-army cable ship, 3500 deadweight tons, 2194 gross tons, built in 1882, sold for $7600 to the General Metal Supply Co., Oakland, Cal. (The buyer is obligated to scrap this ship in the United States within one year from date of sales agreement.)

LAKE GALISTEO, steel lake type cargo, 4208 deadweight tons, 2689 gross tons, built in 1920, sold for $64,000 to the Mallory Steamship Co., New York.

SIOUX CITY, steel lake type cargo, 4208 deadweight tons, 2689 gross tons, built in 1920, sold for $68,000 to the Clyde Steamship Co., New York.

BARRYTON, steel ocean-type, coal-burner tug, 418 gross tons, sold for $50,000 to W. E. Hedger Co., Inc., New York.

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# Reports Show Insurance Slump

## Annual Statements of Insurance Syndicates Disclose Service Given Shipping—Salvage Association Gains Strength

REPORTS of the annual meetings of the American Marine Insurance Syndicates and the United States Salvage Association, Inc., were only recently released for general circulation. The annual appearance of these reports is always a notable marine insurance event, not only in this country, but also abroad, owing to the intense interest with which the progress of these organizations is followed.

The shipping board no longer compels the buyer of its vessels to place the insurance in syndicate "B," with the result that some new owners have taken advantage of the unsettled condition of the foreign hull market to obtain rates unjustified by their experience. Because of the cut-rate campaign of foreign underwriters which the syndicates have deemed it unwise to meet, it was not anticipated that the report for 1923 would show up as well as in prior years and the report shows this is the case. Summing up the entire situation, both the syndicates and Salvage association have rendered a valuable service to American insurance interests, and are regarded as important adjuncts of our shipping.

The report of the manager and chief underwriter have brought out the following statements: During 1922, there were 91 risks closed in syndicate "B", and 25 in 1923. The major portion of these were trip or port risks, so that the premium income was comparatively small. The underwriting account last year for 1921 of syndicate "C" showed a credit balance of $1,853,810. This credit balance shows a further increase and now stands at $1,945,176, a gain of about $91,000. The prospects for 1924 indicate that there will be still further improvement.

### Work of Syndicate "C"

The 1922 account of syndicate "C" has resolved itself into a question of outstanding loss estimates, aggregating $1,624,727. It is believed, in spite of the debit balance shown this year, that the total estimate of the outstanding losses is higher than will actually be paid, which leaves hope for a final profit. The 1923 syndicate "C" account shows a loss, but no definite conclusions as to this loss can be arrived at now since a substantial part of the premium is still to be earned. A large line on total loss interests has been taken in, with respect to the writing of disbursements and / or total loss interests, the actual acceptance of which class began on Jan. 14, 1924.

The membership of the various syndicates at the present time is as follows: "A", 44; "B", 44; "C", domestic companies, 44; "C", admitted companies, 30. During the past year the National Fire Insurance Co., Hartford, Conn.; National Security Insurance Co., Omaha, Neb.; Philadelphia Fire & Marine Insurance Co., and the Northwestern Fire & Marine Insurance Co., Milwaukee, were admitted to membership. The following companies withdrew during the year: Inter-Ocean Reinsurance Co., of Iowa, Norwegian Atlas Insurance Co., Christiania, Norway, and the Springfield Fire & Marine Insurance Co., Springfield, Mass.

### Analyze Business Results

As the result of a system installed some time ago, a complete and elaborate analysis of the syndicates' underwriting will be shortly available. These statistics, which are prepared in great detail, will prove a valuable asset in hull underwriting, as well as a guide in determining the future policy in respect to the various classes of business.

The financial exhibit of the report shows that from the organization on Aug. 10, 1920, to Dec. 31, 1923, syndicate "B" has had net premiums of $746,430.13; an earned premium of $736,508.13; total income of $746,158; the total incurred losses were $127,807.05; and shows a credit balance of $487,356.35. From Dec. 16, 1921 to Dec. 31, 1923, syndicate "B" has had net premiums of $54,223.06; a total income of $55,274.28; incurred losses of $30,178.61; and shows a credit balance of $4,630.26. From Dec. 16, 1922 to Dec. 15, 1923, syndicate "B" has had net premiums of $50,088.85; earned premiums of $33,183.42; a total income of $33,491.30; incurred losses in the amount of $81,261; and shows a debit balance of $59,027.

Syndicate "C", from organization on Aug. 10, 1920 to Dec. 15, 1923, has had earned premiums of $5,391,783.82; a total income of $5,427,467.09; incurred losses in the aggregate of $2,539,597.58; paid commissions of $845,567.60; and shows a credit balance of $1,945,176.41. From Dec. 16, 1921 to Dec. 15, 1923, syndicate "C" had net premiums of $3,185,420.51; earned premiums of $3,138,482.51; a total income of $3,157,841.90; incurred losses in the sum of $2,692,821.51; and shows a debit balance of $93,256.22. From Dec. 16, 1922 to Dec. 15, 1923, syndicate "C" had net premiums of $3,335,803.32; earned premiums of $1,899,468.67; total income of $1,913,939.72; losses incurred aggregating $2,050,782.75; paid commissions of $484,555.41; and shows a debit balance of $708,645 51.

Hendon Chubb, chairman of the underwriting committee, submitted a written report in which he commented upon the present situation as follows:

"We have had to face a most difficult problem. In certain cases we have considered it necessary to take some chances contrary to our best judgment in order that these syndicates might continue as factors in the market, but in many cases we have been so thoroughly convinced that the rates offered by competitive markets were so grossly inadequate that we reluctantly allowed entire fleets to leave us.

"We, of course, are not in a position to give absolutely definite figures as to the results to the competing markets on the fleets above referred to, but we are convinced that the results have been most unsatisfactory to the underwriters accepting the business.: I have before me a list of 11 casualties where the total amount paid by underwriters has amounted to something over three million dollars and in which casualties the syndicate had no interest whatever. When you take into account that this only deals with 11 casualties and how large a proportion of the whole premium normally goes to satisfying the relatively unimportant casualties, you will recognize that we have a basis for the feeling that our judgment in letting the business pass us has been justified by the event.

### Improvement Is Slow

"While there are some signs of improved conditions to show that the competing markets are getting sick of their reckless methods, we can not yet say with any certainty that an improvement can be looked for in the immediate future. There is every indication that in the immediate future the likelihood of further reduction is less, but this in itself means nothing if the business is on an unprofitable basis. There is little satisfaction to be gained from the knowledge that unprofitable business will in all probability not be made more unprofitable.

"It may seem to many that if the



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business is on an unprofitable basis the competing markets will quickly recognize that and conditions will improve, but it is to be remembered that underwriters the world over expanded their facilities during the war and that the reduction in the value of shipping has reduced the amounts placed on single fleets from what it was when the syndicate was formed to anywhere from 75 to 33 1/3 per cent. This has led to a great greed for premium and a large part of the competing markets have been made up of blind followers who do not feel that they can afford to lose premium income and, therefore, will follow any rate if led by well known and successful companies.

"It is generally recognized as a fact that in most important fleets (outside of the line placed with the syndicate) the leading underwriter in consideration for the inadequate rate at which he accepts the hull line has bargained with the broker for a line on premiums reducing, disbursements or some other similar interests at a rate sufficiently high to make the whole proposition attractive and remunerative to him, leaving it to the followers of this lead to absorb the punishment that follows writing at inadequate rates. It is this 'selling the lead' which has done more to destroy sound underwriting conditions on hulls than any one factor. It would seem that the underwriters who have been in the habit of following these leads must in time learn their lessons and either decline to follow those who lend themselves to this practice or else insist that at the time they bind hull lines, the terms and rates paid the leader on disbursements, etc., be divulged."

Resolutions were adopted conveying the appreciation of the subscribers for the able and efficient services rendered by Benjamin Rush and William H. McGee.

# Salvage Association Improves Service

THE following is quoted from the report of Lawrence J. Brengle, manager of the United States Salvage association:

The year 1923 has been gratifying, in that it has shown an appreciable expansion of our activities as representatives of underwriters. The increase of business from this source has been accompanied by a corresponding increase in income which has enabled us to meet that section of our contract with the shipping board requiring that private work be self-supporting.

"In view of the abilities and energy displayed by our surveying staff, I feel sure that the prestige of the association has been materially increased during the past year and that we have been successful in keeping down repair costs and otherwise protecting our clients' interests. As our progress rests primarily with the surveying staff, I wish to comment first upon its members and our general personnel.

"We have made few additions and suffered few losses to our personnel during the past year, the present staff, including our branch offices, totaling 49, which is but 4 more than the number mentioned in the last annual report. The executive and clerical body make up 34 of this total and the surveying staff 15.

### Damage Survey Work

"While the total number of surveys handled dropped from 4514 to 4401, this decrease of 113 is confined entirely to work on shipping board vessels, as our private work for the same period advanced from 1067 surveys in 1922 to 1362 surveys in 1923, a net gain of 295, or 28 per cent. This feature is gratifying and is substantial proof of the support which our subscribers are giving us.

"With approximately the same number of shipping board vessels in operation during 1923 as during the preceding year, we have been obliged to make 150 less damage surveys on them. This is in large measure the result of improved personnel and condition of upkeep to which the salvage association has devoted a great deal of effort.

### Condition Survey Work

"During the year just past, or rather during the period from Feb. 1, 1923, to Feb. 1, 1924, we made a total of 929 periodic condition surveys for the shipping board. While this total is appreciably less than the total attained in 1922, it should be recalled that to offset this decrease of 258 there has been produced, in connection with our 'special condition' work, a great number of condition inspections which, coming at frequent intervals in between the dates when our periodic condition surveys were held, have kept us in more intimate contact with each and every vessel.

"Our periodic condition reports, however, continue to be the mainstay of our condition work and constitute the basis of all additions to our approved list and of nearly all such withdrawals as may be occasioned by physical unfitness.

"Our special inspections of shipping board vessels carried on in conjunction with the work of the cargo underwriters' conference committee stand forth as perhaps the most important work of the year. This effort has been productive of benefit to the cargo underwriters and to the shipping board alike. To the underwriters it is gradually affording the assurance of improved physical maintenance of the vessels, a pronounced decrease in the number of cases of improper loading or overloading and an improvement in the morale of the ship's personnel, all of which has in great measure been brought about by the unremitting efforts of our surveying staff headed by our chief surveyor, Mr. Foley. For the shipping board, it has to a great extent secured at the hands of cargo underwriters treatment for its vessels commensurate with their improved condition and comparing favorably with that accorded to competing ships of private and foreign ownership, not to mention a freedom from many claims for damage to cargo which otherwise would doubtless have been incurred.

"The number of salvage cases in which we have actively participated is somewhat greater than reported at the last annual meeting and the call for such services has again been sufficient to demonstrate the value of possessing an officer with experience in this important field.

### Special Work

"The most important perhaps is the examination of general average adjustments which has been undertaken by the salvage association at the request of a committee representing the members of the board of underwriters of New York. Under this arrangement the salvage association is delegated to examine and report on statements of general average submitted to it through the board of underwriters, who are acting in behalf of the interest cargo underwriters. This work is progressing.

### Foreign Representatives

"Our foreign agents number practically the same as last reported. We have 102 such agents, as compared with 97 a year ago. These representatives have under their supervision a total of 149 of the more important seaports, in addition to a considerable number of ports of lesser consequence. During 1923 these agents handled a total of 174 damage surveys, of which 113 were on shipping board vessels and 61 for private account."

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# How Ships Use Storage Battery

## Many Important Needs Now Met by These Batteries—Their Function and Care

BY JOHN W. WEIGT

STORAGE batteries have been known on shipboard for many years. The wider use of electricity for auxiliaries on merchant vessels has increased the number and variety of storage batteries required. Today their functions cover the range from the small radio "A" battery, for lighting the filaments of the vacuum tubes in the radio set, to a battery capable of lighting all the emergency lights on the largest ship.

An early conspicuous case in which storage batteries aided in saving human lives on the sea was Jack Binns' famous call for help by wireless telegraphy on Jan. 23, 1909. This call was made possible because of the fact that on the REPUBLIC was a small storage battery which supplied the current to operate the wireless set after the ship's generators were put out of commission. The United States government for some years has made it compulsory for steamship companies to supply an auxiliary source of power for their radio apparatus. The law requires that any vessel carrying fifty or more persons must have an auxiliary means of operating the radio set for four hours. This emergency source of power is usually a storage battery.

The main emergency radio storage battery on a merchant ship consists of sixty cells carried on one of the upper decks in one or more waterproof boxes. This battery is placed as near to the radio room as possible. The capacity of the battery will depend upon the size of the radio set which the vessel carries. The average set of two-kilowatt capacity requires a battery of about 140 ampere hours at the four-hour discharge rate. The switchboard for this battery is placed in the radio cabin and is so arranged that the radio set can be operated from either the ship's power or from the battery. This same board also connects the battery to the power of the ship for charging.

Current from the generator of the ship is normally used to operate the radio equipment and the battery is kept on the line on "trickle charge."

The author, John W. Weigt, is associated with the marine radio department of the Electric Storage Battery Co., New York.

JOHN W. WEIGT

"Trickle charge" consists in constantly charging the battery through ordinary electric bulbs of the proper size to allow a very small current to pass. If this method is followed, the battery will always be fully charged ready for an emergency. The charging board should be so designed that only one switch movement is required to throw the radio set from the ship's power to the battery. Seconds count in an emergency.

Besides the emergency battery for the main set, some of the larger vessels also carry emergency batteries and radio sets in some of the lifeboats. The power lifeboats on the LEVIATHAN are so equipped with emergency radio sets and small storage batteries.

In addition to the requirements for emergency radio storage batteries, the law also requires that on passenger vessels, whose generators are below the water line, an emergency source of power must be provided for lighting companion-ways, etc. Here again the storage battery is widely used. On the smaller boats, a sixteen-cell battery of about 150 ampere hours capacity at the four-hour rate is carried. On the larger vessels, a larger battery must of necessity be provided as there are more lights. Some times the emergency lights are operated from the main radio battery. In this case, the capacity of the battery must be equal to the combined requirements of the radio set and the lighting system. This battery would ordinarily have a capacity of 200 ampere hours or more at the four-hour rate.

Many smaller batteries of varying voltages and capacities are located at different points on a merchant vessel for supplying current for signalling and interior communication. These are not in any sense emergency batteries, but are the regular source of power for operating the call bells, signals, annunciators, etc. The storage battery is particularly well adapted for the operation of these low voltage systems as direct current is always available on shipboard for recharging. Fig 3 shows a battery specially designed for this class of service. The cells are sealed in and the vent caps so designed that the battery does not require a special battery room but can be installed at any convenient point. These batteries are usually assembled in units of from three to eight cells and the number of units used will depend on the voltage required for the particular application or system used. A storage battery for this class of work is cheaper to operate than a primary battery and over a period of years will save the operator money.

The rotor of the gyro-compass, which is kept spinning at a very high speed, is normally supplied with power from the ship's bus. Many vessels equipped with gyro-compasses have a 20-volt, 50-ampere hour storage battery "floating" across the bus and so arranged that if the ship's power fails the battery immediately takes up the load and keeps the rotor spinning.

The care of a storage battery is a simple matter if the small amount of attention necessary to its proper maintenance is given systematically. Three points are to be observed: First, proper charging; second, the addition of water regularly; and third, the keeping of the top of the battery clean. Where the battery is "floated" on the line, it is most important that trickle charge lamps of the proper size be installed to give the correct



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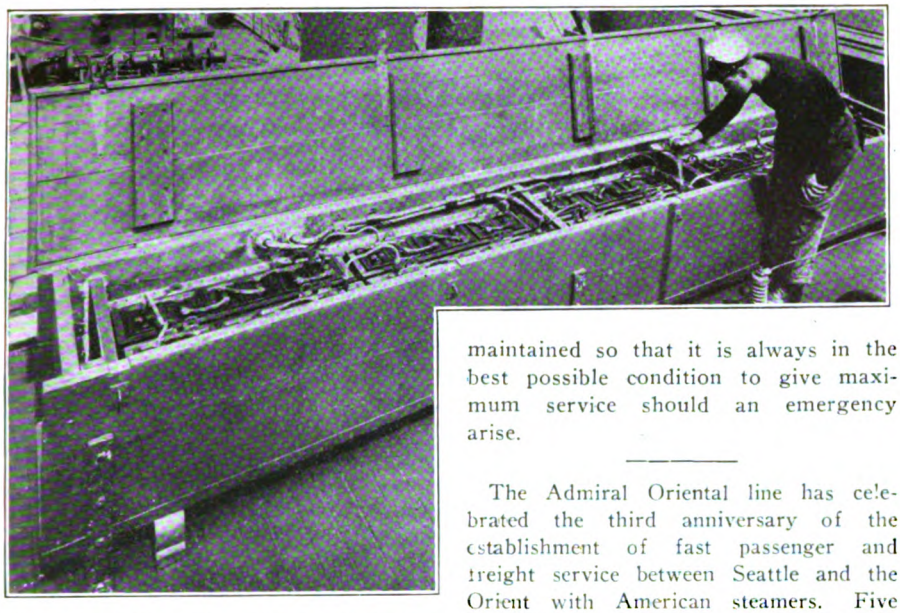

FIG. 1—EMERGENCY RADIO BATTERY ON STEAMER CRISTOBAL SHOWING BATTERY INSTALLED IN BATTERY BOX

charging rate. These should be inspected frequently enough to detect burned out bulbs before the battery is discharged too low.

When a new battery is received, it should be charged at a low rate until the specific gravity, read with a hydrometer, reaches a maximum in all of the cells. This specific gravity reading should be recorded. At least once a month the battery should be given a slow overcharge and the maximum specific gravity reading of all cells compared with the reading recorded from the first charges as noted above. This comparison will furnish a check as to whether or not the battery is receiving sufficient charge.

Distilled water should be added frequently enough to the cells so that the plates are always covered with solution. When water is added to the batteries, any that is spilled should be wiped off immediately and at the same time the tops of the cells thoroughly cleaned. This cleaning should be done each time the batteries are filled so that the trays are kept clean and dry.

This study reveals that with the exception of the batteries for interior communication, the storage battery on the merchant ship is essentially a piece of emergency equipment. However, emergency apparatus that is not in proper working condition when an emergency arises is worse than no equipment at all. Reliability than should be the guiding factor in the selection of a battery for use on a merchant vessel. Second, and of almost equal importance, the battery after it is installed must be properly maintained so that it is always in the best possible condition to give maximum service should an emergency arise.

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The Admiral Oriental line has celebrated the third anniversary of the establishment of fast passenger and freight service between Seattle and the Orient with American steamers. Five government carriers of the "535" type are on this route and since 1921 they have greatly increased the overseas business passing through Puget sound. In the last three years, these five express liners have steamed 938,000 miles, carried 65,000 transpacific and interport passengers, $297,360,000 worth of raw and manufactured silk and 1,340,000 tons of freight in both directions. The same company also operates 12 government owned freighters.

---

Memories of an unsolved mystery of the sea were recently recalled when Capt. Knut Wedin and Mate Karl Klasson, of the Swedish steamship ARATOR, gave depositions before a United States commissioner in Seattle as to an occurrence which is thought to have a bearing on the disappearance of the Union Sulphur Co.'s freighter HEWETT in 1920. The HEWETT was bound from Sabine, Tex., to New York and no trace of crew or vessel has ever been found. Captain Wedin and Mate Klasson four years ago were in the steamer ELSA and while off the coast of North Carolina narrowly averted collision with a derelict which is thought to have been the cause of the HEWETT'S mishap. The evidence taken has been forwarded to New York where 24 suits are pending against insurance companies and 20 suits against the owners of the steamer by families of the missing seamen. Under the admiralty law it is necessary to establish the fact that the steamer actually was sunk.

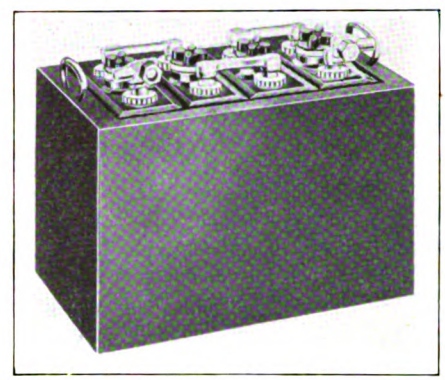

FIG. 3—TYPICAL BATTERY FOR INTERIOR COMMUNICATION. NUMBER OF CELLS PER UNIT AND NUMBER OF UNITS USED WILL DEPEND ON VOLTAGE AND SIZE OF SYSTEM USED

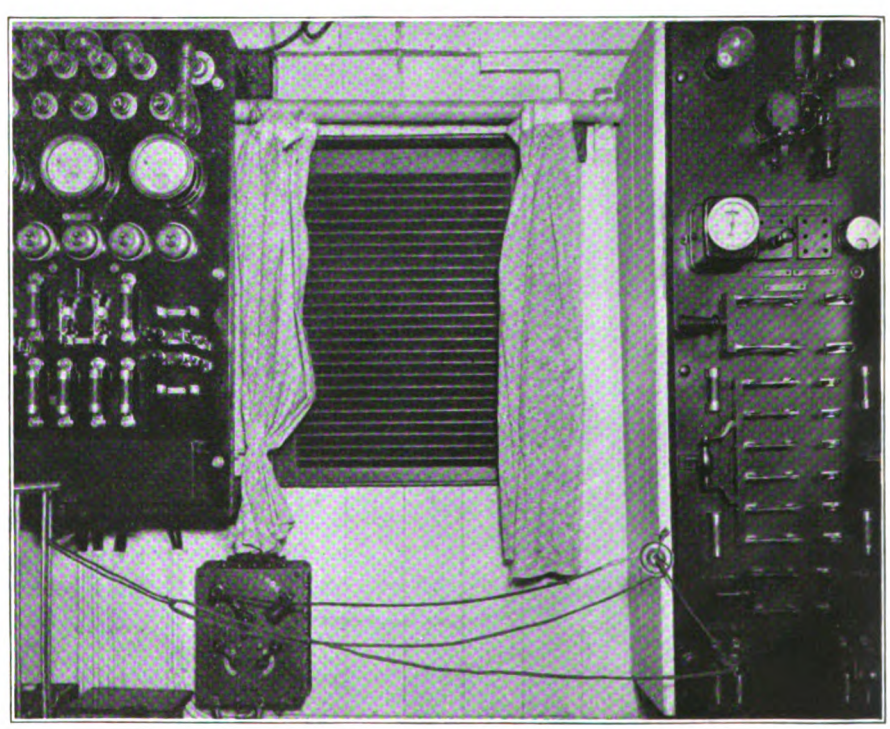

FIG. 2—RADIO CABIN ON STEAMER FORT ST. GEORGE. EMERGENCY RADIO SWITCHBOARD IS AT EXTREME RIGHT

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## New Yacht Carries Gyro-Stabilizer

The new yacht VANADIS, designed by Cox & Stevens for C. K. G. Billings and built by Krupp Shipyards, Kiel, Germany, is diesel engined, the installation consisting of two 900-horsepower, 6-cylinder Krupp engines. The VANADIS is 240 feet long, 35 feet beam and 14 feet draft. She is thoroughly modern in every respect and is one of the most up-to-date vessels afloat.

The VANADIS is equipped with the Sperry gyroscopic ship stabilizer to assure her of a calm passage in rough weather. This ship stabilizer, which is placed forward of the main engines, contains a revolving element spinning at 1400 revolutions per minute having a rotor of 6 feet 6 inches diameter with a 21-inch face, weighing 25,500 pounds. To spin this rotor, a motor of 80 horsepower capacity is provided. The oscillating element is mounted in gudgeons fastened to the ship's hull. The gudgeons are provided with roller bearings through which the gyroscopic stabilizing moment is transmitted to the ship, neutralizing the ship's roll. This moment or the torque delivered to the ship varies from zero to a maximum of 300-ton feet, depending upon the cycle of the ship rolling.

The moment is zero when the ship is just on the verge of changing its direction of roll, say from port to starboard, and it is maximum when the ship is passing through its upright position.

A precession motor of 15 horsepower actuates the oscillation of the gyroscopic unit, being connected through a train of gears having a reduction of about 100 to 1. The control gyroscope, a sensitive element of the stabilizer equipment, automatically controls, by means of electrical contactors, the direction and rotation of the precession motor.

The theory of stabilization is interesting. To neutralize even the extreme rolling of the VANADIS, such as 30 degrees or 40 degrees, the stabilizer need have a quenching power of only 5½ degrees for each single oscillation. This is due to the peculiar phenomenon of the ship's roll whereby the waves gradually build up a large amplitude of oscillation and then crush this out as the waves come out of phase. Since the stabilizer need deliver only a small neutralizing force, it, therefore, reduces the stress and strains.

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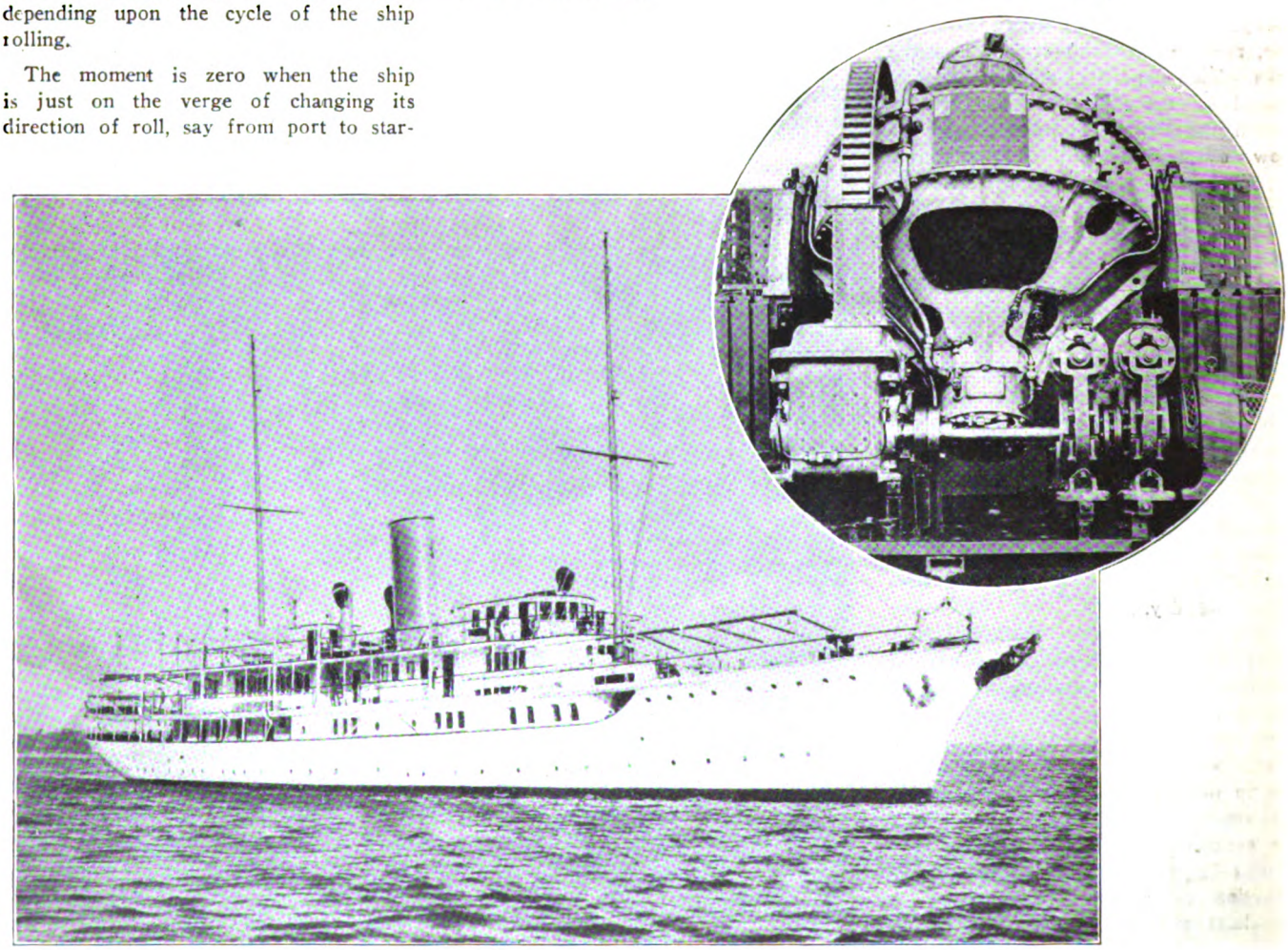
Thirty-eight consecutive round voyages between Puget sound and Honolulu in the sailing schooner HELENE constitute the record established by Capt. O. Lembke, who took command of his vessel 11 years ago.

## Ship Board Will Change 60 Ships to Diesel

Chairman O'Connor of the shipping board recently declared that with the careful expenditure of the $25,000,000 made available by congress, some 60 large steam cargo vessels, aggregating 600,000 deadweight tons, now idle, can be converted into oil engined ships. This money is available out of the board's construction loan fund, now amounting to $67,000,000. Such a program will provide much needed replacement and will also serve to emphasize the fact that the American flag is to remain on the seven seas, according to the chairman. It is understood that 12 ships of between 8800 and 9400 deadweight tons each, have been tentatively selected as the first group to be converted. A committee of the shipping board is now engaged in deciding on the type or types of engines for this conversion work. In the matter of selecting main and auxiliary machinery, an attempt will be made to standardize on high-grade equipment at reasonable prices.

The special committee formed to study the diesel field is expected to report some time in July.



DIESEL YACHT VANADIS IS FITTED WITH A GYROSCOPIC STABILIZER

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# Design Oil Type Harbor Dredge

## Army Engineers Use Powerful Dredge to Clear East River Channel—New Features Tested

THE dipper dredge, HELL GATE, is owned and operated by the United States engineer corps, first district, New York, under District Engineer J. R. Slattery, lieutenant-colonel corps of engineers. The design and construction were carried out under the supervision of H. O. Lovejoy and R. L. Hamilton, Cleveland. The hull was constructed by the Staten Island Shipbuilding Co., Mariner's Harbor, Staten Island, N. Y. The machinery was built in Cleveland and vicinity. The dredge has been in service for the past nine months digging clay, hardpan and boulders, and blasted granite in East river, New York. The design was based upon the swift tidal current in East river and Hell Gate channel together with the hard material to be excavated and produced a machine with many unusual features of structural strength and machinery.

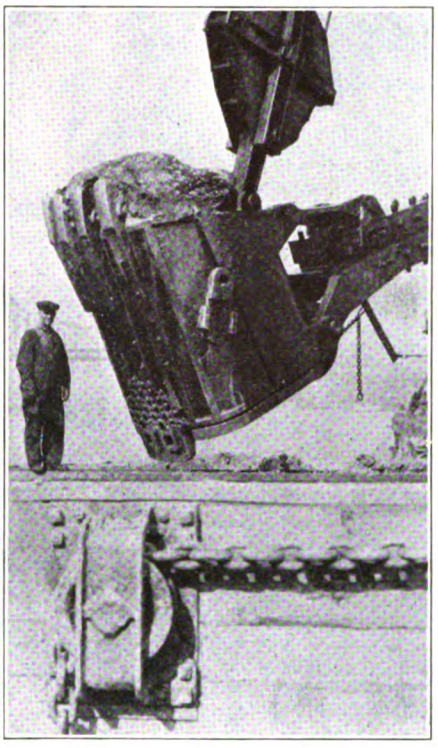
The hull dimensions are:

| | ft. | inches |
|---|---|---|
| Length molded | 140 | 0 |
| Breadth molded | 48 | 0 |
| Depth molded at bow | 15 | 0 |

Displacement with spuds up, tons, 1750

The hull structure is of the usual box type, with a 45-degree rake at the stern. A watertight bulkhead is worked across the hull abaft the boilers to provide fresh water capacity. A nonwatertight screen bulkhead forward of the boilers and fore-and-aft on either side of them separates the fuel oil tanks and machinery from the boilers. In detail, the hull construction follows the general lines of ship design, with local alterations and re-enforcements demanded by the heavy stresses resulting from dredging operations. Ordinary floors, side frames, and deck beams are channels, but in way of the main hoist unit, boom foot, spud-wells. A-frame feet, etc. heavy plate and angle webs are substituted. A heavy girder runs fore-and-aft on either side of the center line to carry the main hoist at the forward end and the major part of the boiler weights at the after end. The longitudinal trusses are 30 feet in height and are worked into the head beam and spud-well structure forward and the stern spud slide aft.

The turntable for swinging the boom is 24 feet in diameter. An unusual feature at this point is the short vertical jaws that engage the top chord of the boom girders at their stiffest point, instead of the ordinary long horizontal jaw whose point of contact on the boom



DIPPER FOR HARD DIGGING ON EAST RIVER DREDGE

is generally uncertain. The turntable is carried above the head beam and is supported by a cantilever built into the hull floor construction. This leaves the forward deck clear of the usual system of diagonal and other bracing employed to support the turntable.

The A-frame is of box section, steel throughout, and 70 feet high. The feet are steel castings pin-connected with sockets that are riveted to the deck and side plating. There are four backguy ropes with equalizers at the top and adjustable sockets at the bottom anchorage. The top gudgeon pin is a vanadium steel forging built into a structural connection with the legs and fitted with a rotating collar that carries the boom guys. Both boom and A-frame guys are a special wire rope 2¾ inches in diameter.

### Details of Boom

The boom is of the usual elliptical, double box girder type, weighing with its fittings 58 tons. The pivot upon which it swings covers 50 square feet of deck space and is so fastened that the thrust of the boom is carried entirely by a heavy flange on the bow and riveted stop blocks on the deck. This arrangement eliminates the usual method that involves long rivets through many thicknesses that are continually working loose and allowing the pivot to work on its fastenings with each swing of the boom.

The shipper shaft is a hollow manganese steel casting working in bronze-lined steel bearings bolted to the boom girders with Swedish iron bolts. The brake wheels are attached to the shaft by machine-fitted bolts. The wheels are 9 feet in diameter. The brake belts are steel bands lined with friction blocks. These brakes are operated by air cylinders in control of the cranesman, the usual foot brake being eliminated. This innovation has proved to be entirely successful, the 80-ton handle and dipper being kept under complete control and with no physical exertion, through a small air valve on the cranesman's platform.

The bow spuds are steel girders 50 inches square and 93 feet long. They are designed to resist both cross-bending and torsion through a unique system of internal bracing that includes both longitudinal stiffening and a torsion tube running about two-thirds of their length. The spuds weigh about 60 tons each. They will pin the dredge up in 65 feet of water. The usual sheave at the bottom to carry the lift rope is avoided by the use of a double lift rope attached to an equalizer shaft at the bottom, thus avoiding the troubles that usually accompany underwater sheaves and also the weakening of the spud structure by cutting away essential metal to make room for the sheave and its fittings.

The stern spud is 42 inches square and 92 feet long. It weighs about 32 tons. The spud is handled by a double cylinder 10 x 10 engine, through suitable gearing to a double rack bolted to the spud. The machine is fitted with friction brake, pawl, etc., for stopping or holding the spud in any desired position.

The dipper handle is of the "split" type, built up of Douglas fir timber, encased in steel plates and bars. The fastenings are all Swedish iron bolts and rivets. The handle is 72 feet long and weighs 50 tons. It will dig to 55 feet below the surface. The dipper connections are steel castings of box section so designed and fitted that the weight of the handle is carried on their box ends and not on the



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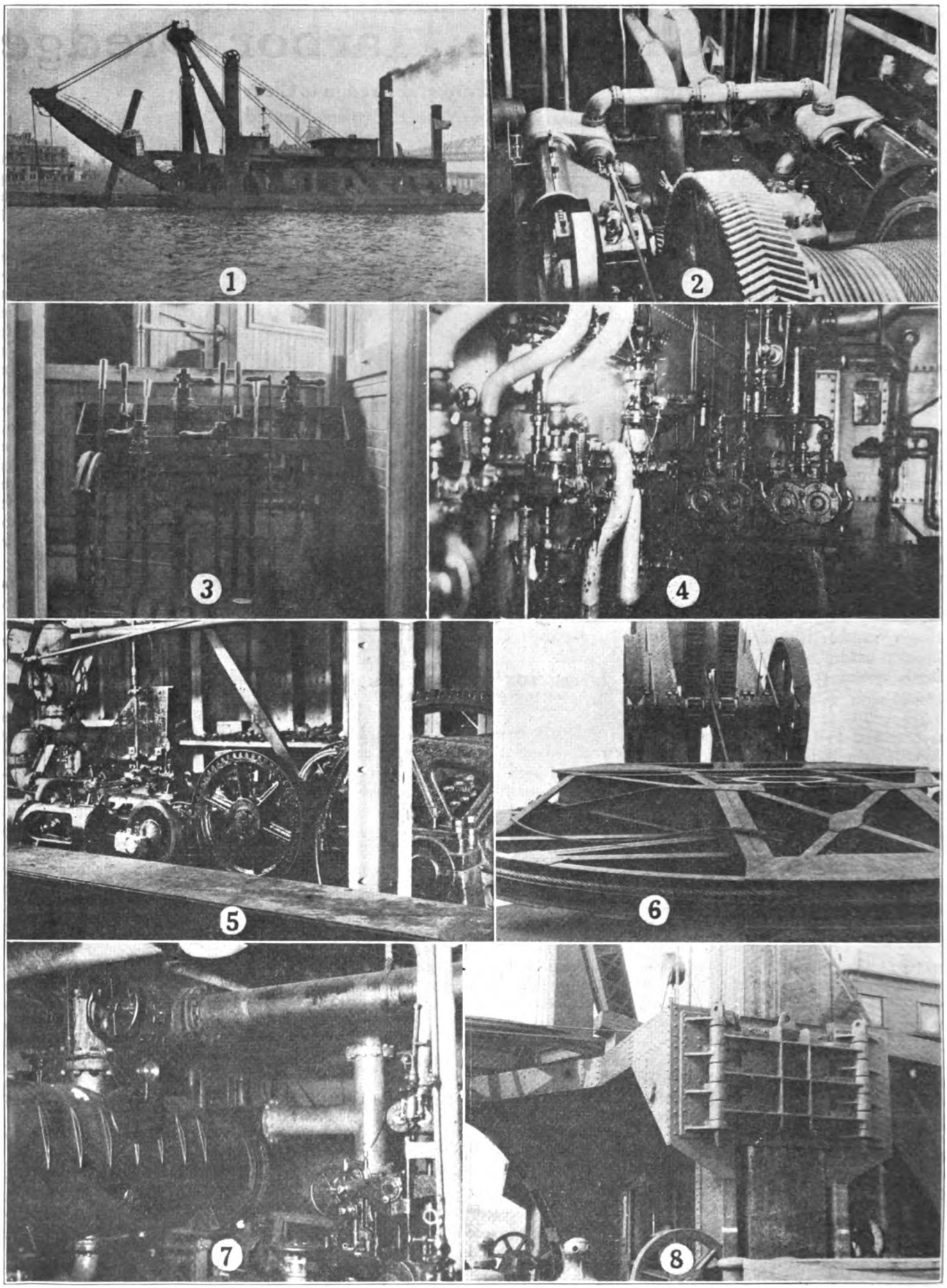

1—DIPPER DREDGE HELL GATE AT WORK IN NEW YORK HARBOR. 2—MAIN HOIST. 3—CONTROLS. 4—OIL FUEL SYSTEM IN BOILER ROOM. 5—SWINGING MACHINERY. 6—BOOM TURNTABLE. 7—CONDENSER. 8—FORWARD PART SHOWING BOW SPUD

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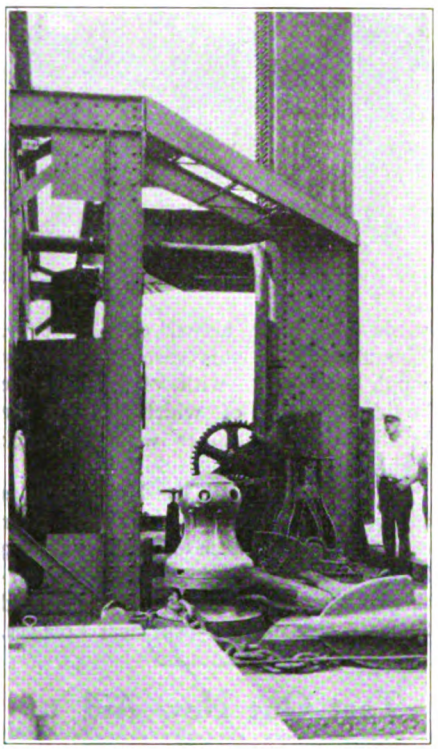
connecting bolts. The racks are manganese steel shrouded on both edges and attached to the handle by "T" head Swedish iron bolts.

The dipper for hard digging is of 9 cubic yards capacity and weighs approximately 25 tons. The construction is such that the digging strains are carried by the castings and not by the connecting rivets, notwithstanding the fact that the usual bail has been done away with and the engine pull is applied to the top member. After nine months of hard service, the shell rivets are still intact. The top and bottom sections are so locked together and to the double butt straps that the rivets have little to do beyond holding the butt straps in place. The dipper is entirely manganese steel, except that mild steel butt straps are used.

The main hoisting, machine consists of a double 20 x 24 engine operating with 150 pounds working pressure. The engines are fitted with piston valves without link motion. A small double cylinder engine is connected with the main crankshaft through a sliding gear to work the machine in the reverse direction when desired. The hoist drum is driven by two herringbone gears 10 feet 6 inches in diameter meshing with the crankshaft pinions. An air-operated friction belt is fitted to both gears for driving the drum. The check belt is fitted to the drum on the port side and is air operated. The belt linings are all special blocks. The backing drum is driven by a single gear meshing with the starboard main drum gear and is fitted with an air operated driving belt and automatic drag belt. Both drums are fitted with sleeves for carrying an oil bath to their bearings in addition to the regular lubrication from compression grease cups.

The engine and drum housings are bolted together on each side and are carried on the longitudinal machinery girders running the full length of the hull. This structure has proved to be almost entirely free from vibration even when the machinery is driven at the highest speeds. The compressed air system employed on the belts is a distinct improvement over the customary steam rams. There is no noise when the rams are applied, it is much cleaner, requires practically no attention to leaky packings, etc., and the pressure applied can be graduated at the will of the operator. That the method is absolutely dependable is demonstrated by the fact that in no case up to date has any belt or brake on the dredge failed to respond when called upon.

The bow spud machinery is driven by double cylinder 12 x 16 engines, operating at 150 pounds working pressure. The engines are of the piston valve, link motion type. The links are operated by air cylinders of a standard type. There are two drums on each machine, geared to the engine shaft through an intermediate shaft that is fitted with a jaw clutch and ratchet and pawl. The clutch, when disengaged, allows the dredge to rise and fall with the tide when not in operation. This intermediate shaft drives the pin-up drum which, in turn, drives the lift drum. The



AFTER PART SHOWING STERN SPUD

pin-up rope is reeved to a 4-part purchase through sheaves on the top of the spud. The lift drum is geared with the pin-up drum through a 4 to 1 ratio and pulls directly on the equalizer shaft at the lower end of the spud. This method eliminates all working ropes and sheaves under water, as there is nothing but the dead ends of the lift ropes to cause trouble. There is an air brake on the pin-up drum that holds the spud in any desired position either when idle or operating.

The swinging engine is a 4-cylinder 8 x 10, piston valve machine compound geared to the drum and fitted with an air reversing ram. There is also an air brake fitted to the intermediate shaft.

There are two Westinghouse cross-compound air compressors carried on stanchions under the forward deck. The tank is hung under the deck beams. One compressor easily supplies the necessary supply of air, the other being used only as a spare. The operating pressure is 125 pounds. With the exception of the engine throttle valves, which are manually operated, the entire control of the machinery is through air cylinders. This has proved to be entirely successful and is a distinct advance over customary dipper dredge practice.

There are two Scotch marine boilers and a vertical tubular auxiliary, all built for 150 pounds working pressure. The main boilers are oil-fired, while the auxiliary burns coal. The HELL GATE is the only oil-burning dipper dredge in New York harbor. There are two fuel oil tanks, one on either side of the boiler room. Their capacity is sufficient for six days' normal operation. The tanks are separated from the boiler room by a steel bulkhead. One fireman is on watch and has but little to do beyond watching the various gages. No physical work is involved even when the dredge is driven to the limit.

The condenser is of the surface type for salt water service. The air pump is the usual twin-beam reciprocating machine. The circulating pump is turbine-driven centrifugal. Feed pumps are vertical, duplex, reciprocating, automatically controlled. There is also a vertical, duplex, reciprocating fire and bilge pump and two horizontal, duplex fresh water pumps. The pumps are cross-connected so that their operation is interchangeable if necessary.

The electric plant is designed completely to illuminate the dredge inside and out for night operation. Flood lights and clusters are available for lighting the digging area and scows. The generating set is a 10 kilowatt engine-driven unit, with a smaller turbine-driven machine for emergencies.

Four vertical anchor windlasses are each fitted with a wildcat for 1½-inch stud chain and an independent gypsy for handling hemp lines. One of these machines is located at each corner of the hull. The swift current necessitates the use of anchors as auxiliaries in maneuvering East river tides and traffic conditions.

A 3-drum engine-driven winch is placed on each side of the forward deck for handling dump scows. The engines are twin-cylinder, throttle-reverse machines located inside the deck house. The drums are independent, friction-driven and fitted with foot-operated holding brakes. They are sufficiently powerful to handle 1000 yard, loaded scows under all current conditions when the dredge operates. The wire lines are ⅞ inch in diameter.

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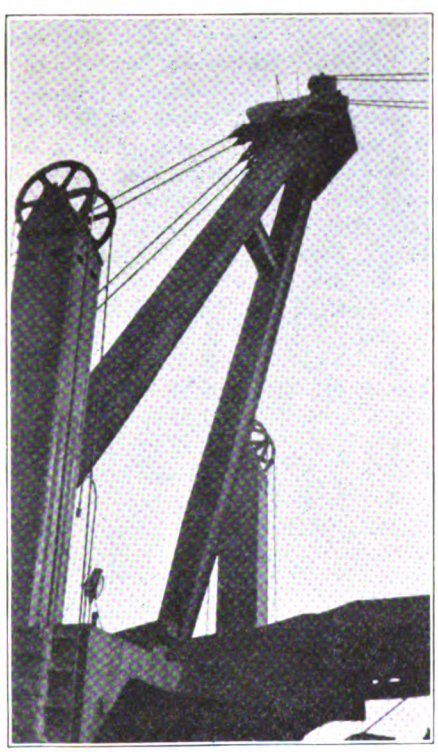
Living accommodations for a double crew are provided in a house on the main deck house roof forward of the smokestack. Galley and messroom are located on the main deck abaft the engine hatch. There is also a washroom fitted with shower baths, etc. A separate house is provided on the forward end of the main house roof for the use of the engineer corps inspectors.

The following performance record is reproduced from the *Bulletin*, a publication issued weekly by the United States engineers, first district. The figures given cover two weeks in the east channel at Blackwell's island in East river:

| | |
|---|---|
| Actual hours dredging | 29.5 |
| Auxiliary work | 42.5 |
| Hours repair | 5.75 |
| Other delays | 16.25 |
| Cubic yards dredged | 9791 |
| Area dredged, sq. ft. | 38,265 |

This gives an average of 332 cubic yards per hour actual digging time. The material in the above was sticky clay that would not dump successfully from the rock dipper that was used.

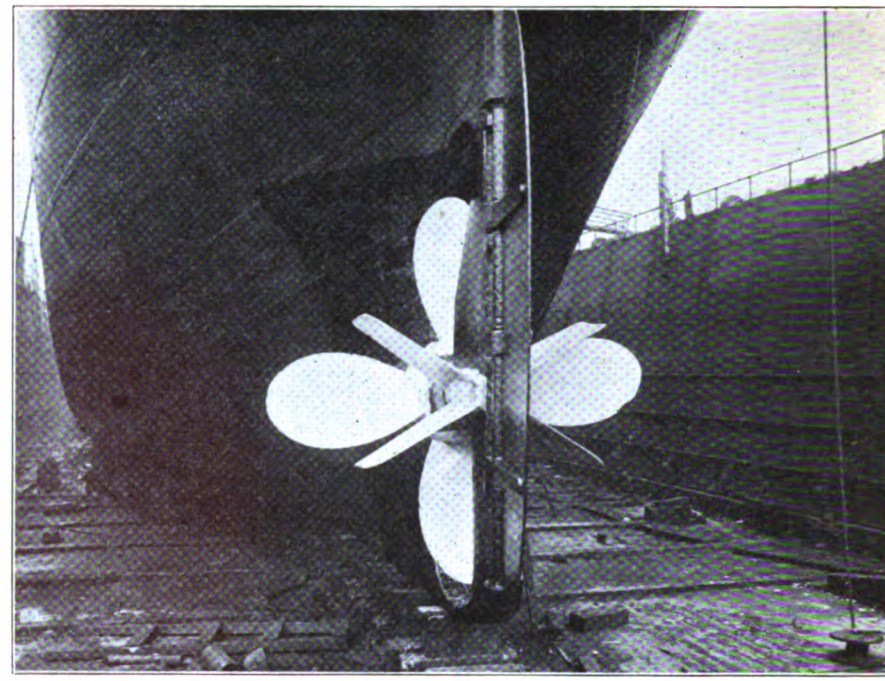


HEAD, A-FRAME AND SPUDS

| | |
|---|---|
| Actual hours dredging | 42.15 |
| Auxiliary work | 30.30 |
| Waiting scows | 3.05 |
| Ordinary repairs | 16.25 |
| Special repairs | 2.30 |
| Other delays | 1.15 |
| Area dredged over, sq. ft. | 26,820 |
| Cubic yards scow measure | 9096 |
| Number of scows | 12 |

This gives an average of 282 cubic yards per hour actual digging time. The material in this case was largely tough hardpan with large granite boulders, many of which had to be hoisted off the dipper with the rock tackle.

At the present time the HELL GATE is at work on Sheil reef in East river digging blasted granite and removing hardpan overburden in advance of further drilling and blasting by the United States engineer corps' drill boat CORLAER.



COUNTER PROPELLER IN PLACE ON STEAMER NORFOLK

## Test Out New Aid to Propeller

That all new ideas in connection with the long established and now universally adopted screw propulsion of ships do not lapse without a practical trial is evidenced by the accompanying illustration showing the American steamer NORFOLK of the Coastwise Transportation Corp. in drydock at the Robins plant of the Todd Shipyards Corp., Brooklyn, after having been equipped with a counter propeller. This is probably the first installation of this device of any size in an American shipyard, and the future performance of this vessel will surely be followed with keen interest by all marine engineers.

The counter propeller consists of six fixed blades fitted behind the regular propeller. Two vertical blades of cast steel are electrically welded to the stern frame. The four other blades of cast iron are secured two on each side to the center of the vertical blades by bolts through the cast steel vertical blades and the respective flanged bases of the cast iron blades. The side blades are purposely made of cast iron so that should a submerged obstacle be encountered these blades will break off and consequently will not foul the regular propeller. In this connection, it is stated that several vessels plying European waters, fitted with this device, have experienced no difficulty or breakage of the counter propeller under the most severe ice conditions in the Baltic and along the Norwegian coast.

Three distinct advantages are claimed with use of the counter propeller. Handling of the vessel is improved. Vibration due to the main wheel is reduced. Propeller efficiency is increased. This last, probably the most important, advantage is due to the theory that a good part of the tangential velocity of the water imparted by the propeller in its rotary motion is converted at once into axial motion by being deflected into this direction by the counter propeller blades. This would increase the effective thrust for the same application of power to the propeller shaft which, of course, means increased speed or the same speed of the ship with less power. A distinct gain of efficiency in the case of the NORFOLK would tend to prove these claims in a practical way.

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Captured in the Spanish-American war and since 1898 used by the United States government as a transport and cable ship, the old steamer BURNSIDE has been sold to an Oakland, Cal., firm for scrapping. The BURNSIDE prior to 1898 was the Spanish steamer RITA. She was the first prize taken by the American navy in the war of 26 years ago. For nearly 20 years the BURNSIDE has been assigned to service on the Alaska cable.

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## California Has Largest Car Ferry

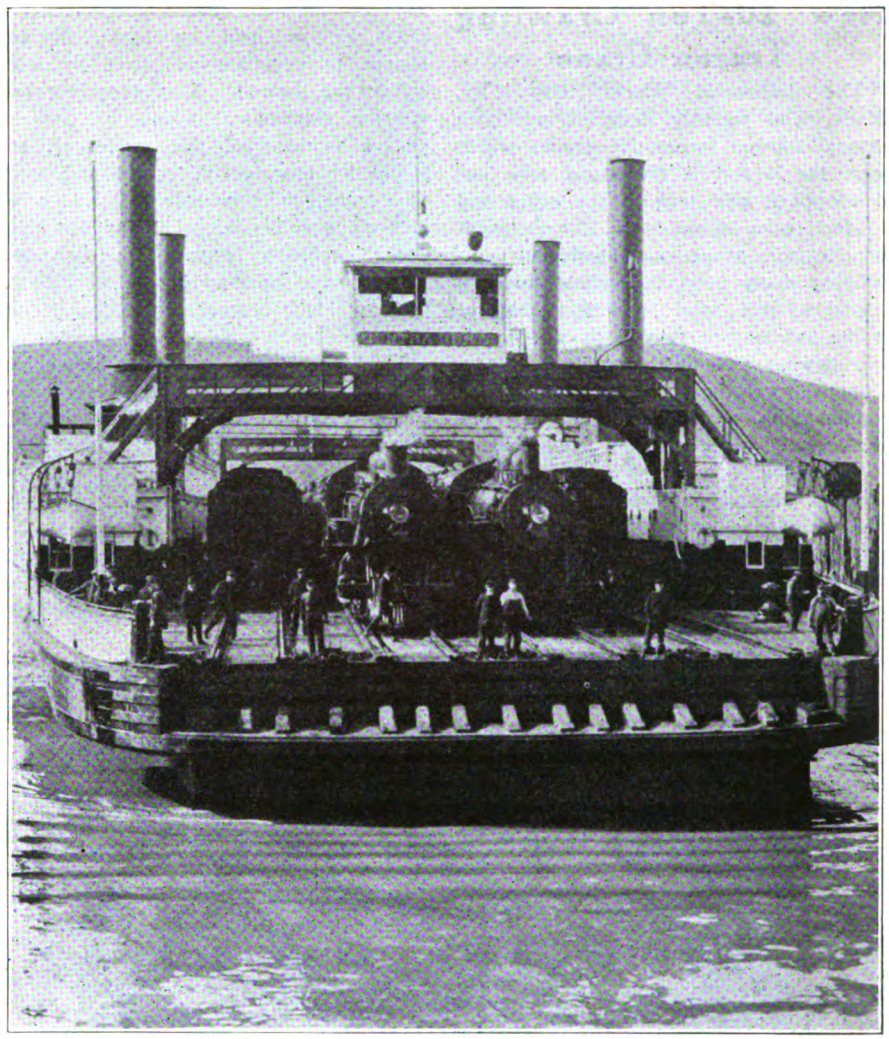
The vessel illustrated which is claimed to be the largest ferry in the world, carries trains across Carquinex straits, between Port Costa and Benica, Cal. She is operated by the Southern Pacific railroad. The ferry is 433 feet in length over all, 116 feet beam over guards, 66 feet molded beam and measures 3800 tons. The deck has four train tracks with a capacity of 36 freight cars or 24 passenger cars, and two locomotives.

## Frisco Passenger Ferry of Record Size

The new Southern Pacific ferry steamer SACRAMENTO, largest ferry boat in the world used exclusively for passenger service, entered the Oakland San Francisco run recently. The ferry is 300 feet in length with a 78-foot beam. She has seats for 1950 passengers and is provided with 4000 life belts.

The steamer is equipped with side paddle wheels 29 feet in diameter, with a 10-foot face. The displacement is 1590 long tons. Steam is supplied by two boilers, each 29 feet long and 10 feet in diameter. The engine is of the vertical beam type. The ferry is steered by steam steering engines and fitted with telegraphic communication between pilot house and engine room, as well as all other modern appliances to meet requirements of the United States steamboat inspection service.

The engine or gallows frame is steel and its installation is original with the Southern Pacific company. The pilot houses are of Southern Pacific design, with elliptical front, giving full and clear vision in every direction. Steering pointers have been installed on this steamer, making the first on San Francisco bay.

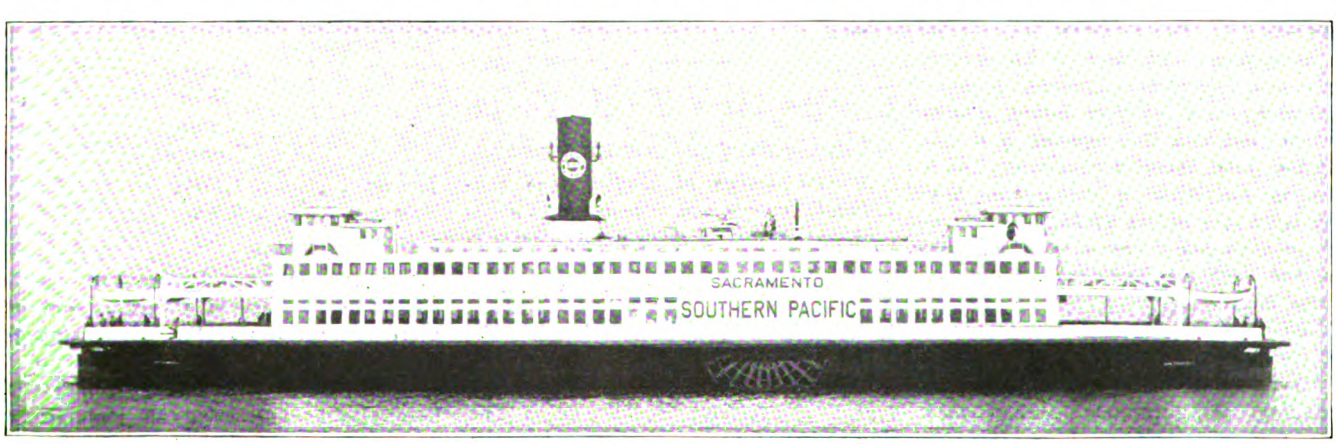


RATED AS WORLD'S LARGEST FERRY WITH CAPACITY FOR 36 FREIGHT CARS AND TWO LOCOMOTIVES

The main saloon on the upper deck is finished in blue and gold. This decoration is restful to the eyes as well as attractive. This saloon is well lighted and ventilated by a skylight running its full length. Seats are constructed of mahogany, with walnut backs.

A novel feature of the ferry is the saloon cafe, located just outside the main saloon. This cafe is finished in pink and gold, with mahogany glass top tables and special lighting effects. It is expected to appeal specially to women passengers, and has a seating capacity of 42 persons.

The dining room on the lower deck is larger than on most ferry steamers and is equipped with the most modern appliances for serving meals. The counter is low and fitted with a marble top. Accommodations are provided for 85 in this dining room.




BIG FERRY RUNNING BETWEEN SAN FRANCISCO AND OAKLAND, CLASSED AS LARGEST IN THE WORLD DEVOTED SOLELY TO PASSENGER SERVICE

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## New 10-Ton Crawling Tractor Crane

The Industrial Works, Bay City, Mich., who recently designed and built several 200-ton locomotive cranes which were the largest in the world, now has developed a new type at the other end of the scale. This is a 10-ton crawling tractor crane, as illustrated embodying many new engineering features.

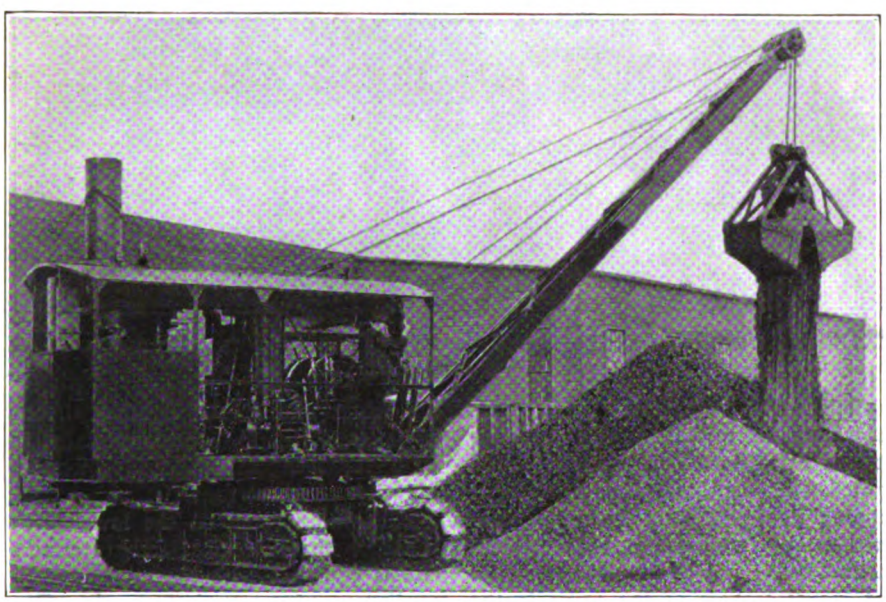
One of the most important features is the independent control of the traveling, slewing and hoisting motions. These motions may be utilized in a variety of combinations which are said to result in a greatly increased speed and efficiency of operation. For instance, the hoisting and slewing motions may be combined in bucket work for operation at high speed and when traveling, the boom may be swung in any direction to clear obstructions. Slewing in either direction is accomplished, without reversing the engine, by means of a double friction clutch and a train of bevel and spur gears. A slewing brake holds the boom securely with a suspended load in any position. The entire upper works rests on a rotating steel base, which insures rigidity and perfect alignment.

Tractor shoes are close fitting, smooth surface steel and they operate over adjustable idle sprocket bearings which take up the slack in the tractor belt. Five large size rollers of 25 inches diameter on each side decrease traveling friction and keep the bearings high up out of the dirt.

The crane has two traveling speeds and reversal of direction is accomplished by reversing the engine. Steering while propelling is accurately accomplished from the operator's platform through friction clutches and brakes controlling each tractor belt. Either belt may drive, coast or be held by brake in any degree to negotiate as sharp or wide a turn as desired. This propeling and steering mechanism is one of the exclusive features of this crane. It enables the operator to propel and steer the crane independently of all other motions with the boom in any direction. Other exclusive features are the automatic double hoisting drums which provide automatic control of the bucket during operation.

The new crane is built for either steam, electric or gasoline power. The steam crane has two horizontal, double acting cylinders 6 inches diameter by 8 inches stroke. The engine is equipped with a simple radial type reversing gear, by means of which loads may be lowered and the hoisting line paid out by power. The gasoline crane is equipped with any one of four semi-diesel engines as desired.

The crane is adapted for service with clamshell or dragline bucket, electromagnet, hook and block or grapple. It is readily convertible into a shovel or a pile driver.



TRACTOR CRANE FOR GENERAL SERVICE

## Design New Single Stage Centrifugal Compressor

A new design of single stage centrifugal compressor featured, it is said, by strong construction, accessibility, improved pressure characteristics and higher efficiencies, has been developed by the General Electric Co., Schenectady, N. Y.

The new compressors are of two types: single and double inlet. The single-inlet type is designed for the more general use, the double inlet variety only being necessary when the ratio of impeller inlet and exit diameter reaches a design value demanding the use of the double inlet, to function properly.

The machines are available in capacities from 500 to 75,000 cubic feet per minute at 0.75 to 6 pounds pressure. They are provided with oil pumps designed to furnish plenty of oil to the bearings. Capped holes in the tops of the bearing linings are eliminated, preventing the entry of dust into the lubricating system. A heavy hinged cast iron cover is provided on one side of the middle bearing bracket, which may be lifted to inspect the return flow of oil from the lubricating system. The pulsation point of these machines occurs at very light loads. The efficiency curves are very broad, thus showing an improvement over older types. The no-load power consumption of the new machine is between 60 and 70 per cent of that required for machines of previous design.

Outstanding construction details include bearing supports of strong construction, the casing being attached to the bearing bracket by a flange. The weight of the casing, although not great, has been distributed in such a manner as to make the unit unusually strong mechanically. This is made possible by the use of steel plates varying from ⅛ to 1-¼-inch in thickness in the various parts of the compressor.

## U. S. Ships Get More Freight at Penang

Notable increase in tonnage carried from Penang, Straits Settlements, in American ships was evident during the first quarter of the year, the month of February witnessing the largest percentage of total tonnage to America in American boats ever carried, according to consular advices to the department of commerce. The following table gives this tonnage together with that booked with foreign vessels:

| | American Ships Cargo Tonnage | Foreign Ships Cargo Tonnage |
|---|---|---|
| January | 1,469½ | 4,724½ |
| February | 2,266 | 2,776 |
| March | 242 | 3,718 |

The round-the-world American vessels have thus far secured a fair amount of cargo these advices state, by maintaining fast schedule to American ports.

The shipping board feeder line vessels have also been securing an increasingly large amount of freight, especially on the return voyage to Hong Kong.

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## Choose New Officers for Todd Companies

George J. Robinson is now president of the Robins Drydock & Repair Co., of which he has been vice president for many years. The Robins company is one of the subsidiaries of the Todd Shipyards Corp., of which William H. Todd is president. Mr. Todd was also president of the Robins plant and his retirement recently from that office permitted the advancement of his old friend and associate. George Dawe and Frank Gilbride, superintendents at the plant were made vice presidents and William J. Robinson, son of the new president, has been appointed superintendent. J. Herbert Todd, son of William H. Todd, has been made president of Clinton Drydocks, another Todd subsidiary, with Joseph Haag, vice president.

George J. Robinson was born in Brooklyn in 1870 and has been identified with ship construction and repair all his life. He started as a passerboy with the old firm of Hendren & Robins (now the Robins Drydock & Repair Co.) and advanced steadily to leading man, foreman, assistant superintendent, superintendent, general manager and vice president.

GEORGE ROBINSON
New president of the Robins Dry Dock & Repair Co.

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Low water levels on the Great Lakes continue. Last year the water level was at different times lower than at any other period in recent years. In May of this year, Lakes Michigan and Huron were 0.32 foot lower than the previous low record of May 1896. The five lakes in May ranged from 0.36 to 1.35 feet below the average May level for the past 10 years.

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Improvements in ship design and construction, coupled with greater ease of communication, has reduced the number of missing ships. The number is still surprisingly large, 21 ships being posted as missing in 1923, the same number as in 1922.

# Finds Value in Our Panama Articles

BY HUGO P. FREAR

**Suggestions for aiding American shipping frequently include a discussion of the supposed need for changing this country's rules and practices in measuring ship tonnage. Such recommendations have again appeared in recent weeks. For that reason, the following letter from Hugo P. Frear, naval architect of the Bethlehem Shipbuilding Corp. Ltd., received some months ago, has timely interest and value now.**

*To the Editor:*

I wish to thank you for the extra copy of the January issue of MARINE REVIEW containing an article on "Panama Canal Tolls."

This is the best boiled down summary of the subject which has appeared in print, and fully disposes of the claims of alleged discriminations in tonnages detrimental to vessels measured under United States admeasurement rules as compared with tonnages for similar vessels measured under foreign rules.

These erroneous claims have been made so frequently during the past few years that a clear statement of the facts at this time was most opportune. On several occasions the writer has been confronted with claims of this character and with suggestions that some joint action be taken toward adjusting our rules with a view to eliminating the alleged discrepancies. Our reply, invariably, was substantially as ably elaborated in the above articles, viz: that the apparent discrepancies in tonnage were not due to lack of uniformity in the rules or in their application, but on account of differences in the manner of enclosing or fitting certain spaces which were identical in all other respects.

The fact is our activities in the merchant marine sprang up so suddenly that many builders and operators went into the business with little experience or training and did not take the time or trouble to learn much about the intricacies of the tonnage rules. It is not surprising, therefore, that when two vessels apparently identical as given by the registered particulars, except for tonnage, are noted, the uninformed conclude that there has been some unfair discrimination. Indeed many old operators accustomed to typical coast passenger vessels on which the 32 per cent was about the only thing to look out for believed we were at a disadvantage.

It does not follow that an operator on account of not securing the greatest possible exemptions, is not alive to the situation. Exemptions sometimes reduce the draft to such an extent that the loss in deadweight more than offsets the saving in canal tolls. With heavy cargoes the tonnage opening and lighter draft would probably be unprofitable while the reverse might be true with bulky cargoes. It is often almost necessary with shelter deck vessels to speak of registered tonnage and deadweight in the same breath. An inquiry was recently sent out for a price per deadweight ton on a shelter deck freighter without a tonnage opening and later, on the same vessel, with tonnage opening. The cost of the tonnage opening vessel would naturally be a little greater although the deadweight tonnage was about 1200 less and yet it was extremely difficult to explain why the price per deadweight ton should not be the same.

A vessel of the CHALLENGER type was built under contract with tonnage opening for the cotton trade in which case cubic capacity was more important than maximum draft. A number of these vessels were laid down on speculation. Before they were completed America entered the war and the price per deadweight ton increased to about $200. As the closing of the tonnage openings would increase the deadweight about 2000 tons advantage of this was taken at a profit of about $400,000 for each vessel.

Getting back more on the subject of the above referred to article, mention might be made that it is optional with the owner to take either the 32 per cent or apply the Danube rule for the exemption on account of machinery spaces. Probably few have had occasion to use the Danube rule in the case of freighters but this will give some slight advantage where the gross tonnage due to exemption is relatively small.

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## Finds Upturn in British Shipping and Building

In no branch of industry has British trade, since the great war, suffered more than in its shipping and shipbuilding, advices to the department of commerce show. The year 1923 was a period of marked depression with insufficient work to keep ships or shipyards reasonably busy.

Of the world's present shipping tonnage, in steam and motor driven vessels, amounting to 62,335,373 gross tons, the British Empire owns 21,695,374 tons, equal to 35 per cent. Twelve years ago the figure was 48 per cent and in 1916 when, owing to the war, statistics ceased to be published, it had fallen to 45 per cent. In 1919, when records were again available, Britain's proportion was shown to be only 38 per cent and the percentage has continued to drop to the present figure of 35 per cent. The output from British shipbuilding yards for 1923 was only 39.2 per cent of the world's output against 41.8 in 1922 and 58 per cent in 1913. Apart from the war years, the lowest output of British yards was in 1893 when 863,383 tons were launched, or more than 30 per cent above the total output of their yards 30 years later, last year's output being only 682,263 tons. Small as this output was, it still kept Britain in first place for shipbuilding in 1923, with 552 vessels launched from its yards.

Among specific shipbuilding districts, the Clyde again claims first place. While the total is very low in comparison with normal times, it is yet higher than that of any other British river. During 1923, the Clyde turned out 122 vessels of 175,528 tons, the lowest tonnage since 1886. This depression of the past year affected the whole community much more than any previous spell of poor trade and threw out of work a large number of men. Thirty three per cent of the shipyard workers in Scotland were unemployed during 1923. All the shipyards and engineering shops had little or no work, a considerable number were closed and such work as was carried on was greatly handicapped for seven months of the year by labor strikes. How poor a year 1923 really was on the Clyde can best be shown by comparing the output with that of its best year 1913, when 370 vessels of 756,976 tons were launched. Not only did the river go back for more than a generation, but it reached a level which represents less than one-third of the ships of its best year, less than one-fourth of the tonnage of that year and not much more than one-seventh of the horsepower. Cost of building has materially decreased since 1920.

With shipowners at the present time, it is just a case of sitting tight and waiting for something to turn up. Ships must be run on the most economical lines in the hope that the long lane of depression will soon come to a turning.

Despite the poor trade of last year, Clyde shipbuilding firms are still optimistic regarding the improvement of the industry. Since the new year things are improving, work has been increasing, not rapidly but steadily, and it is expected that three yards which have been closed for periods ranging from one to two years will be reopened for the construction of vessels for which contracts have been obtained. Work has also been resumed on several of the steamers which have been held up on the stocks for quite a long time. Prospects in general, however, are not bright although business should improve considerably if given stable and peaceful industrial conditions.

# Viscount Pirrie-1847-1924

VISCOUNT PIRRIE, one of the greatest figures in the marine industry not only of Great Britain but of the world, died June 6 on board the steamer EBRO of pneumonia. He had completed a business tour of South America and an inspection of the Panama canal. The steamer was enroute from Panama to New York. This master shipbuilder was head of the great Harland & Wolff yard at Belfast, Ireland. As shown by an analysis in MARINE REVIEW, of May, 1923, of the interlocking directorate methods by which British shipping has entrenched itself, Lord Pirrie was also a director of 14 steamship companies including several of the largest, of one of the four British consolidated railroad systems, of two banks including one of the world's largest, of two trading companies, and of eight industrial companies, including shipyards, engine builders, oil producers and general manufacturing. In brief, his career can be sketched as follows. Born in Quebec in 1847, he returned to Belfast and at 15 became a premium apprentice at Harland & Wolff's. In 12 years, he became a partner. The yard was building the first of the transatlantic liners for the White Star line and its record since has been one of leadership in passenger ship construction, including the OLYMPIC, TITANIC and BRITANNIC. Lord Pirrie expanded the capacity of the Belfast yard, added new plants on the Clyde, repair yards at Liverpool, Southampton, and London, developed connections and facilities for oil engine building. In addition, he was one of the largest shipowners in the world, a dominant influence in the African and South American trades through the Elder-Dempster, Union-Castle and Pacific Steam Navigation companies. A catalog of his various shipbuilding, ship owning and in-

VISCOUNT PIRRIE

Who was the leader of a larger combination of marine enterprises than any other man. He has just died at sea while completing a South American tour

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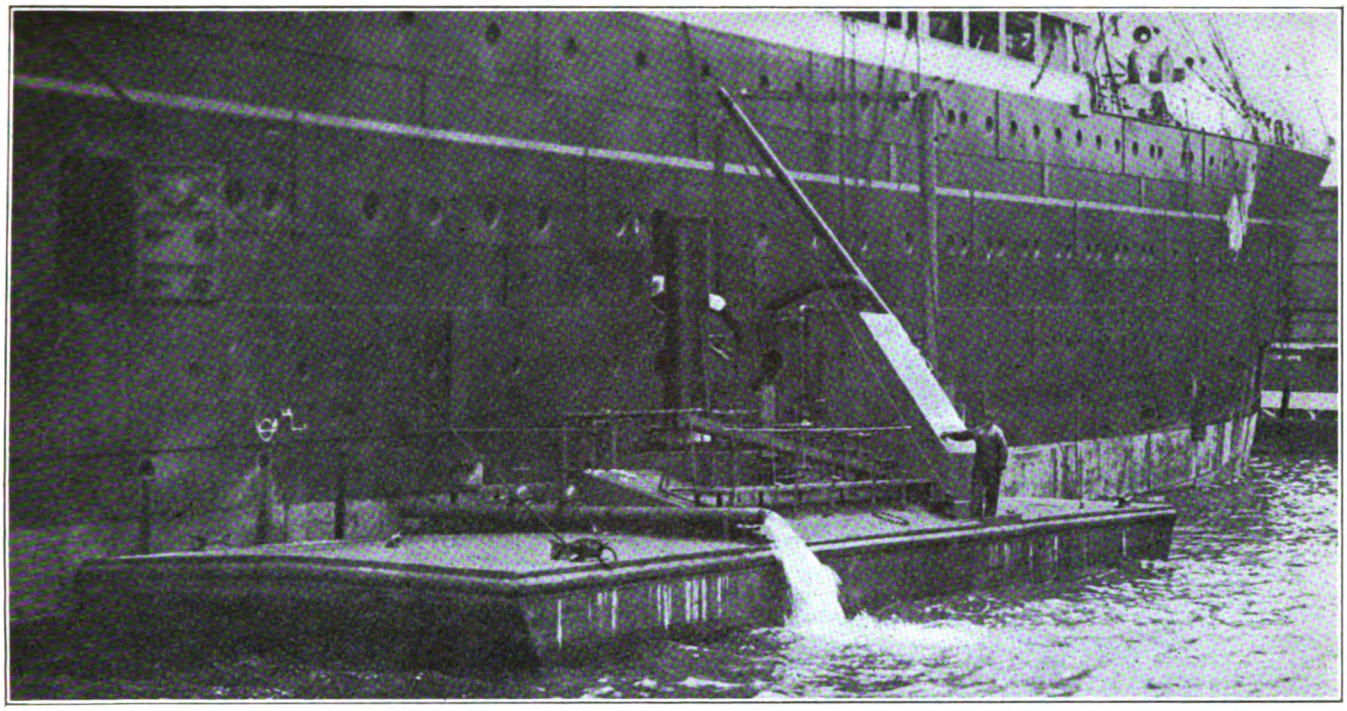

NEW TYPE OF OIL SEPARATOR BARGE, BUILT BY TODD SHIPYARDS CORP. TO PREVENT POLLUTION OF BATHING BEACHES AND HARBOR WATERS, DISCHARGING BALLAST WATER FROM STEAMER VEENDAM

dustrial enterprises, readily gives credence to the belief that he probably was the leader of a larger combination of marine enterprises than any other man in the world.

He was a technical man as well, a fact which led him to sponsor successive new developments in design and engineering. The diesel engine was actively pushed by him, as evidenced by the work now being done at his yard in building three of the largest passenger motorships yet built—all for shipowning companies in which he was a leading director. He had built about 700 ships. During the war he was controller-general of merchant shipbuilding, a position in which he had charge of directing all merchant ship construction in order to promote production.

Among leading companies of which he was a director are Elder Dempster & Co.; Union Castle Mail Steamship Co.; Atlantic Transport Co.; Frederick Leyland & Co.; Glen Line; White Star Line; Pacific Steam Navigation Co.; Southern Railway Co.; London Joint City & Midland Bank; Eastern Telegraph Co.; British-Mexican Petroleum Co.; British Union Oil Co.; Burmeister & Wain Oil Engine Co.; Harland & Wolff; John Brown & Co.

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The CHARLES M. EVEREST of the Vacuum Oil Co. has been fitted with a Sperry gyro-compass, a gyro-pilot or automatic steering equipment, and a Sperry helm angle indicator system. The entire Vacuum Oil fleet is to receive this modern navigational equipment, installations being carried on as vessels reach port.

## Build Barge to Separate Oil from Ballast

Pollution of navigable waters in harbors and around docks and along the wide stretches of bathing beaches, due to the pumping overboard of oil mixed bilge and ballast water from oil burning ships, has aroused great concern and serious protest on the part of harbor authorities and the federal government, and laws prohibiting such pollution have lately been strictly enforced. Until an international agreement can be reached on this question, separate governments are powerless to prevent ships outside of their territorial limits from pumping oil mixed water overboard. However, due to the necessity of maintaining trim and stability it is not always safe for ships to discharge ballast water before they come within the waters under local control, and consequently the problem of developing some practical means of separating the oil from the water is most urgent, and some thought and effort has been directed toward the solution.

The accompanying illustration shows a new oil separator barge pumping ballast water overboard from the oil burning steamer VEENDAM. This barge is non-propelled but has its own power plant, an oil-fired boiler for supplying steam to a large pump and to heater coils, and can be used for the transportation and delivery of fuel oil for ships around the harbor as well as the removal and separation of oil mixed bilge and ballast water from such ships. The capacity is stated to be 200 tons of emulsion (oil mixed with water) an hour. When discharging the ballast water from an oil burning vessel, the water and oil is first pumped into the tank projecting above the deck of the barge, shown in the illustration, and the major separation takes place here. This tank is called a monitor, and the head in it is regulated by a valve on the discharge. From the monitor, as the oil settles, the overflow, or nearly cleared water, passes through several compartments on the cascade principle, becoming successively clearer, until it is finally forced overboard, by gravity, from the last compartment, as clear water.

Built for the Asiatic Petroleum Co., by the Tebo plant of the Todd Shipyards Corp., this barge recently had a successful test in discharging 1800 tons of oily ballast water from the tanks of the Holland-American liner, VEENDAM, at her dock in New York. According to reports of the test, samples of the water were taken every 15 minutes, while it was being pumped overboard, all showing freedom from oil. At the conclusion of the test, it was estimated that 15 tons of oil had been reclaimed. A great deal of interest was shown in the test, and it was attended by representatives of the supervisor of the harbor, the department of plant and structures of the city, several large steamship companies, the owner and the builder.

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The steamer J. H. PLUMMER, built on the Great Lakes and brought to the north Pacific last year, and the former German ship HARVESTHUDE have been purchased by James Griffiths & Sons, Seattle, to carry ore.

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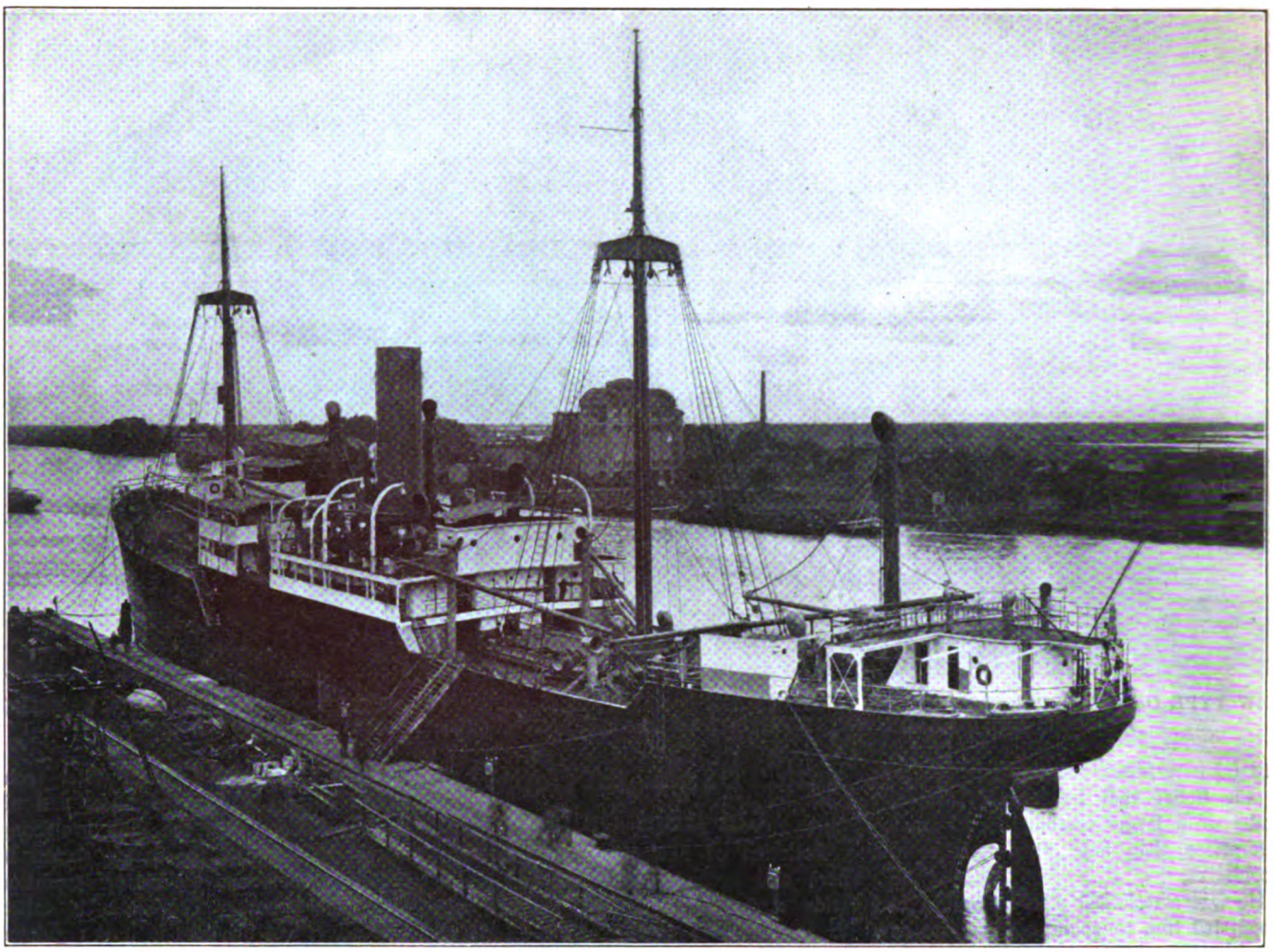

ONE OF THE FREIGHT STEAMERS OF THE NORTH GERMAN LLOYD LINE ON WHICH THE NEW TYPE OF DERRICK IS INSTALLED

## Develop New Portable Arc Welder

A new portable arc welder, designed to give distinctive features of economy and simplicity, has been developed. This unit is said by the manufacturer to be designed to insure smooth and rapid deposition of metal with thorough penetration. It will deliver continuous power and permit rapid production, both with high current and large electrodes, as well as with low current and small electrodes.

This welder is a 2-unit set, consisting of a motor and a generator. The generator is self-excited, thereby eliminating the necessity of a separate exciter. All regulation of current is accomplished by turning a handwheel on the on the generator. A self-adjusting, stabilizing reactor is provided ,which automatically steadies the arc under all welding conditions.

The new welder is made by the General Electric Co., Schenectady, N. Y. It can be used with any of the commercial sizes of metallic electrodes from 1/16 to ¼ inch in diameter. Generator voltage can be adjusted to suit the character of the work. High voltage for complete penetration on heavy work and low voltage to prevent burning through on light work are thus secured at will. Any value of current between 75 and 300 amperes can be obtained in a large number of steps between these limits.

Among the operating advantages pointed out for this outfit are; an arc easy to start and maintain, roller bearing wheels, holes in base for crane hooks and adaptability to long or short leads, for working close by or at a distance from the set.

Among the mechanical advantages are included motor and generator insulation designed to withstand severe operating conditions both with regard to duty cycle of the load imposed and general atmospheric conditions under which ordinary insulation fails. Bearings are waste-packed and oil can not be spilled if the set is tipped when being moved.

This generator is a 2-pole, self-excited, constant energy, single-operator machine with a dual magnetic circuit designed to operate at 60 volts open circuit and 20 to 25 volts under load. It is rated 200 amperes for continuous service, 250 amperes for one hour and 300 amperes for short periods. The motor is a 10-horsepower unit. The complete set has three bearings, the two units being close-coupled by a solid flange coupling. All parts, including generator, motor, generator control panel, motor starter and stabilizing reactor, are mounted on a welded structural steel base of rigid construction and light weight.

The assembled unit is about 63 inches long, 29 inches wide and 47 inches high, weighing about 1600 pounds.

## New Type of Derrick for Ship Use

*By Dr. Alfred Gradenwitz*

A ship's loading tackle, on her way from one harbor to another, constitutes a dead load. Care should obviously be taken to reduce the number of derricks, capstans and cranes to the strictest minimum compatible with the requirements of the service, while those actually required should be so arranged as to be fully utilized under any loading conditions likely to occur.

In order to allow these requirements to be met more satisfactorily, Dr. H. Meyer, Kiel, Germany, has suggested

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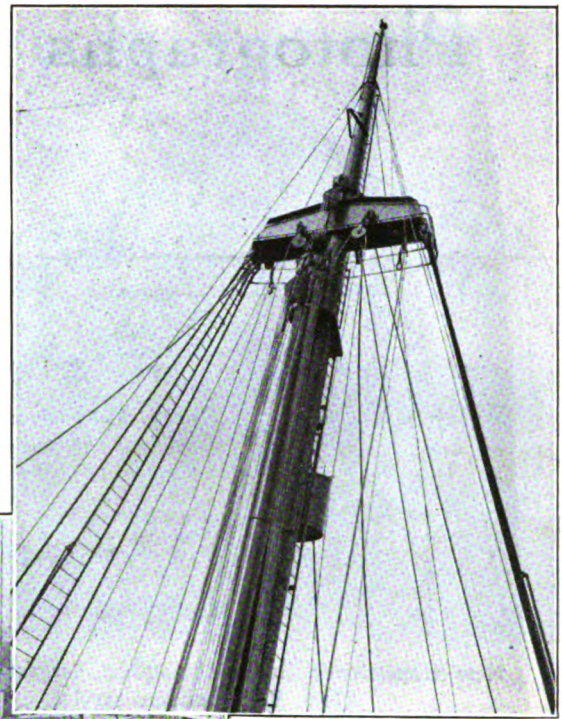
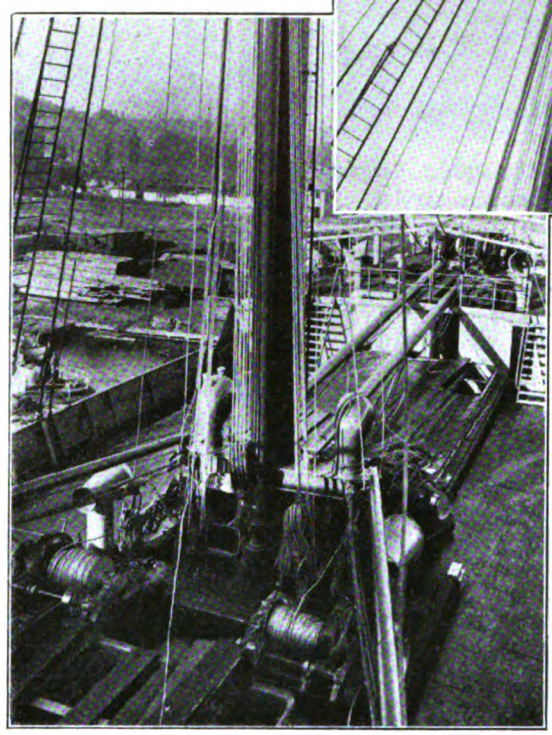
locating the cross-trees higher than according to present practice, in fact, high enough for the derricks, while pulled up, to be swung past underneath and thus to be utilized both fore and aft. This new arrangement is bound to prove especially serviceable in cases where two sets of four derricks each in connection with only two winches had so far been provided fore and aft respectively, with a view to using the four winches surrounding the mast at will for either set of derricks. The new arrangement will enable one set with the corresponding tackle to be dispensed with.

The advantage derived from this scheme will be even greater if, as in the case of smaller vessels, only one winch and derrick are provided for each hatch. However, even in the case of six winches in connection with six derricks surrounding the mast, it will be found advantageous to arrange two of these derricks for swinging past below the cross-trees; either the innermost derricks, or the outermost ones being used in this way.

The new scheme is being carried into practice in the case of a series of freight steamers built for the North German Lloyd at the Vulcan-Werke Shipyards, Stettin, Germany.

DESIGN OF CROSS TREES TO PERMIT DERRICK BEING WORKED FORE OR AFT





ARRANGEMENT OF RIGGING ON FORWARD DECK

## Late Marine Patents

Copies of any one of these patents can be obtained by forwarding 25 cents in stamps to Siggers & Siggers, National Union building, Washington, mentioning MARINE REVIEW:

1484659—Hoist especially suitable for raising projectiles on board ship, Hugh Warren Lee and John W. Swindale, Newcastle-upon-Tyne, England, assignor to S. W. G. Armstrong, Whitworth & Co., Ltd., Newcastle-upon-Tyne-England.

1484881—Propulsion and maneuvering of vessels, James Herbert Wainwright Gill, Headham, England, assignor to Gill Propeller Co., Ltd., King's Lynn, Norfolk, England.

1485280—Life raft for vessels, Arthur W. Lyda, North Canton, O.

1485776—Marine signaling apparatus, John K. M. Harrison, Ogontz, Pa.

1486131—Apparatus for salvaging sunken vessels, Stephen A. Dutton, Philadelphia.

1486606—Safety portable boat, Mariano Pimpinella, Ambler, Pa.

1486821—Submarine signaling, Robert L. Williams, Newton, Mass., assignor to Submarine Signaling Co., Portland, Me.

1487368—Propelling apparatus for water sports and for life saving, Charles Berka, New York.

1489079—Propulsion of vessels, Donald V. Hotchkiss, Helensburg, Scotland, assignor to the Hotchkiss Hydraulic Propeller Co., London, England.

1489508—Submarine mine, Hartley B. Pratt, Barrow-in-Furness, England, assignor to Vickers, Ltd., Westminster, England.

1490059—Life saving suit, Oscar A. Youngren, New York.

1490157—Life saving device, Nicholas Cherniak, Bethlehem, Pa.

1490731—Shipper's ladder, Harry H. Brann and George H. Tenbrook, San Francisco, assignors to Haviside Co., San Francisco.

1491233—Boat propeller, Bertron G. Harley, North Tonawanda, N. Y.

1491747—Apparatus for removing oil and sediment in bulk from ships, Stephen Guardin, Brooklyn, N. Y.

1491750—Air circulating system for cargo vessels, John Hudson, Brooklyn, N. Y.

## Designs New Type of Pressure Governor

A new pressure governor, for use in maintaining pressure in air and water systems, operates in conjunction with magnetic starting panels controlling motor driven pumps, air compressors, etc.

In operation, the governor element is set for a maximum and minimum range of pressure. An auxiliary relay is energized to open the control circuit of the panel when maximum pressure is reached and to close it at the minimum pressure. The electrical connections are so arranged that the governor contacts make contact only, not carrying current or breaking contact, thus insuring longer life of contact tips.

The electrical mechanism is of strong construction. Contact tips are silver plated to give low resistance contact and to eliminate burning and sticking. The device is enclosed in a cast iron box with a glass window through which the indicating dial is visible. The complete unit is designed for wall mounting. It is approximately 10 inches square and 4 inches deep. It is made by the General Electric Co., Schenectady, N. Y.

During the calendar year 1923, a total of 756 American ships, aggregating 4,062,787 gross tons entered Japanese ports, as compared with 2,527,787 tons in 1921 and 3,421,618 tons in 1922, according to statistics forwarded by Consul C. R. Cameron, Tokio. American ships constituted 11 per cent of the total tonnage in 1923, and 9 per cent in 1921. Japanese shipping comprised approximately two-thirds of the aggregate shipping entering Japanese ports in the foreign trade, while British shipping constituted more than one-sixth in the last three years.

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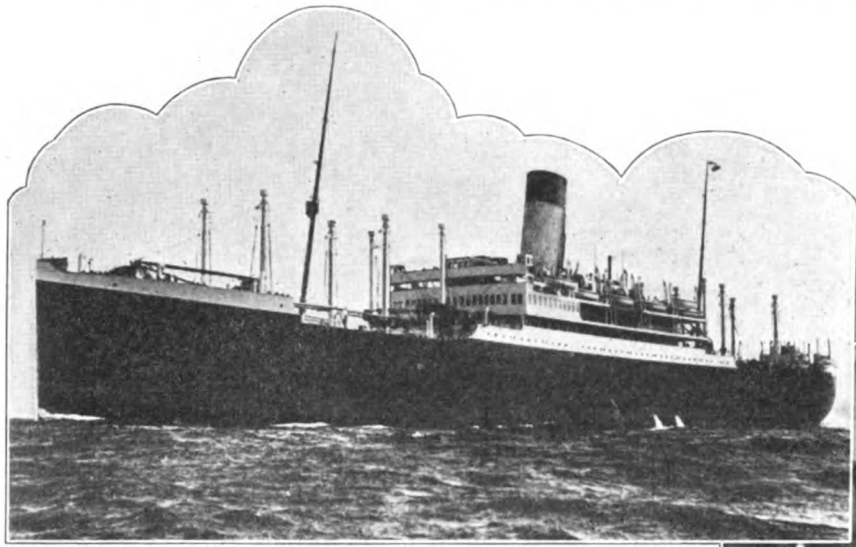
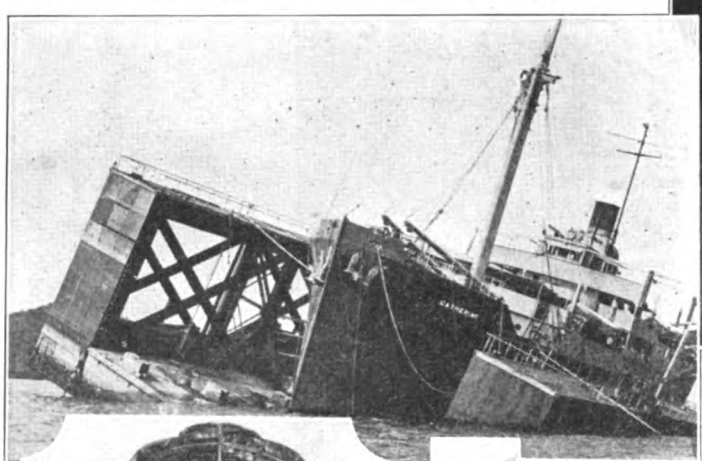
# Photographs from Far and Near



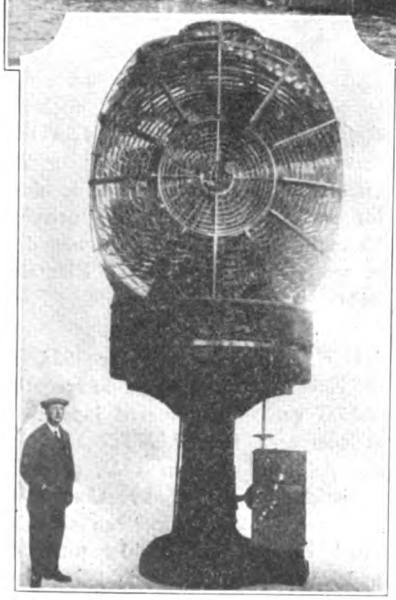
New transatlantic liner Minnetonka, largest ship in New York-London service

Bull liner Catherine on floating drydock at St. Thomas, Virgin Island. The 40-year old dock tilted to one side but fortunately doing little damage

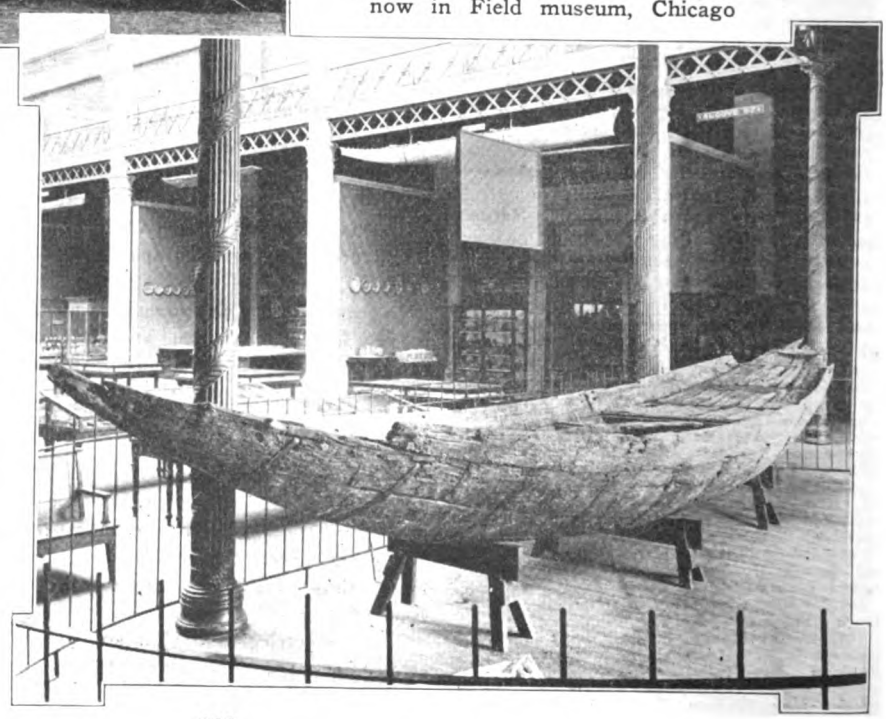
Fire room on transatlantic liner Homeric, recently equipped to burn oil. Her speed has gone to 20 knots, against 18 knots for coal



Oldest boat in world. Belonging to an Egyptian king of 4000 years ago, it is now in Field museum, Chicago



New light at Port Said, Egypt, used on site of world's first lighthouse





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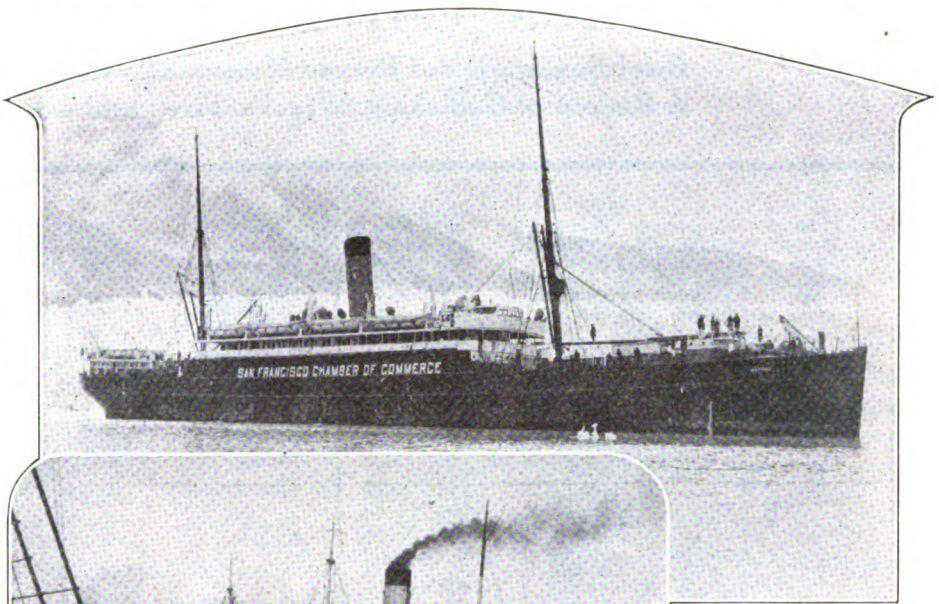
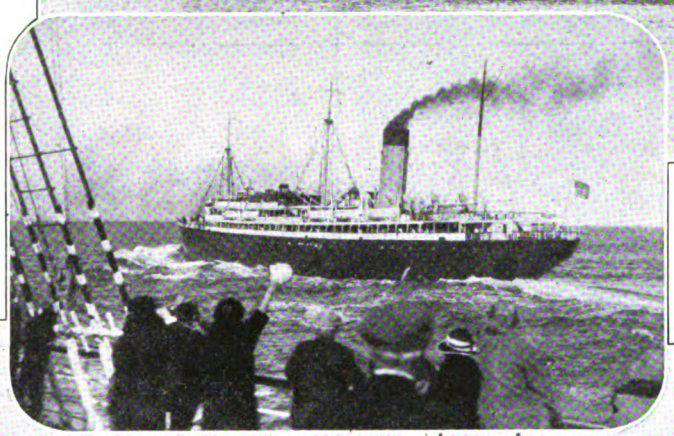
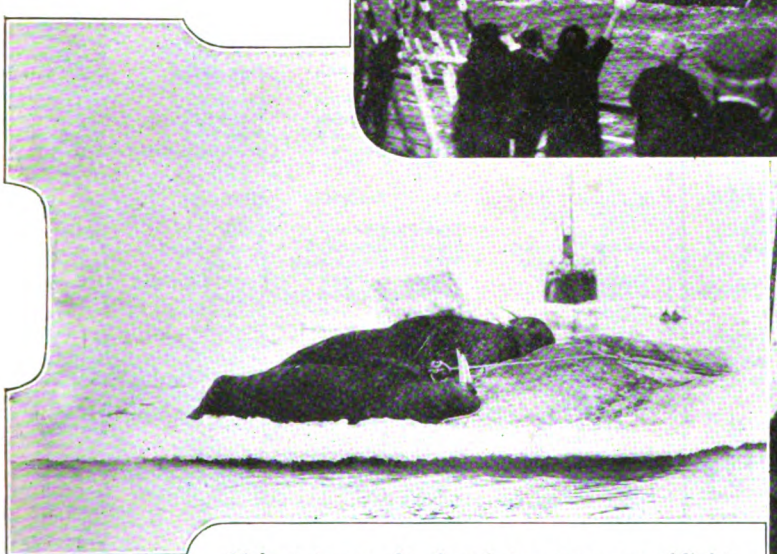
# Latest Marine News in Pictures

The famous liner Buford takes unusual cruises out of San Francisco. At right, she appears leaving for the South Sea islands for her regular winter cruise. Below, she is in the Arctic ocean where she appears in summer. She visits East Cape, Siberia

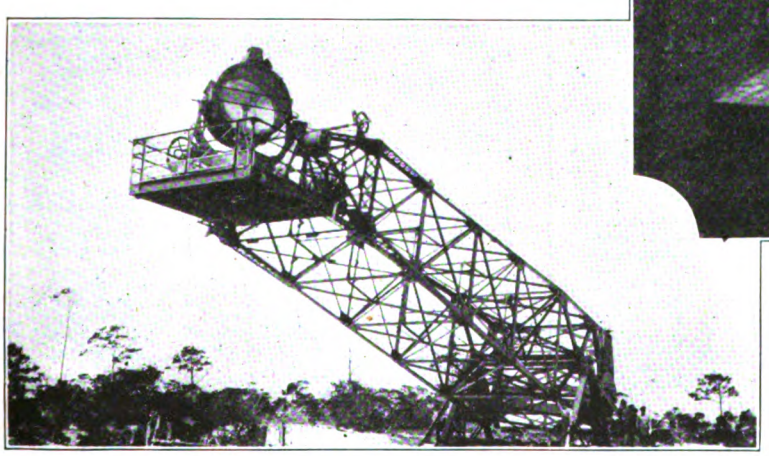


Matson liners passing in mid-ocean, between San Francisco and Honolulu



65-foot tower developed to carry searchlight. It can be elevated to any degree desired or lowered for repair, advantages over a fixed light



Passenger and fruit steamer Atlantida, being launched by Workman-Clark & Co., Irish shipbuilder, for a New Orleans fruit company. She will carry 68 first-class passengers and make 15 knots.



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# Late Flashes On Marine Disasters

## Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

| Name | Date | Nature | Place | Damage Resulting |
|---|---|---|---|---|
| Ambridge | May 7 | Disabled | nr. Tampa | Eng. trb. |
| Arawa | May 5 | Aground | Pipe Is. | Not stated |
| Alice Dollar | May 12 | Struck rock | nr. Chunkeking | Not serious |
| Anacortes | May 16 | Struck dock | Philadelphia | Slight dam |
| American | May 13 | Disabled | At sea | Broke cross-head |
| Alberto Cavaletto | May 14 | Grounded | Gloucester Ferry | No dam. |
| Atna | Apr. 28 | Disabled | Perim | Boiler leak. |
| Ashworth | Apr. 29 | Broke down | nr. Rio Janeiro | In tow |
| Adonis | May 19 | Collision | Deepcut Canal | Undam. |
| Aviateur Genthon | Apr. 30 | Stranded | Alicante | Total loss |
| Archimedes | May 1 | Fire | Salford | Not known |
| Albergallus | May 7 | Disabled | Sulina | Lost anchor |
| Aobasan Maru | May 7 | Stranded | nr. Cape Ashizuri | Leak. badly |
| Araya Mendi | May 6 | Explosion | Bilbao | Slight |
| Altai Maru | Apr. 30 | Collision | Hamburg | Plates dam. |
| Admiral Peary | May 22 | Aground | Canoe Pass | Floated |
| Attivita | Apr. 26 | Disabled | Rio Janeiro | Eng. trb. |
| Ausonia | June 2 | Disabled | Plymouth | Def. mchy. |
| Alteland | May 5 | Collision | off McArthur's Head | Not stated |
| Alcor | May 6 | Collision | Barry | Not stated |
| Allegheny | May 24 | Collision | Soo Canal | Stem twist'd |
| Advance | May 31 | Stranded | Welland Canal | To rud. stk. |
| Argenfels | May 19 | Fouled | Hamburg | Slight |
| Avant | May 15 | Collision | Dunkirk | Leaking |
| Alrich | May 15 | Hit obs. | Hamburg | Undam. |
| Admiral Perry | May 12 | Disabled | Seattle | To prop. |
| Alnmoor | May 13 | Fire | Perim | No ap. dam. |
| Askeladden | May 20 | Fouled buoy | Northumberland | Not stated |
| Alderney | May 18 | Sunk | Lambeth | Refloated |
| Aulne | May 29 | Ashore | SW Cap Bon | Filled |
| Ayaha Maru | May 28 | Disabled | Seattle | In tow |
| Alexandria | May 12 | Collision | Antwerp Rds. | Undam. |
| Andromachis | May 28 | Collision | Malta | Not stated |
| Asahi Maru | May 28 | Leaking | Tokio | Stranded |
| Barge No. 6 | May 6 | Fire | New York | Slight |
| B. Lyman Smith | May 9 | Aground | Pelee Is. | Bot. dam. |
| Birte Jensen | Apr. 28 | Grounded | Barcelona | Uninjured |
| Bitinia | Apr. 28 | Hvy. weather | At sea | Not stated |
| Braeberg | Apr. 30 | Disabled | At sea | Broke down |
| Breaksea Light | May 7 | Grounded | San Pedro Bar | Remains |
| Betterton | May 24 | Disabled | off Quarantine | Lost anchor |
| Bridgepool | June 1 | Disabled | nr. Queenstown | St'mpipe broke. |
| Bifrost | May 19 | Fouled obs. | Kaiser Wilhelm Canal | To prop. blades |
| Bonden | May 19 | Collision | Antwerp Rds. | Undam. |
| Ben Oliver | May 14 | Grounded | Shoreham | No dam. |
| British General | May 12 | Fire | Swansea | Not stated |
| Bradclyde | May 12 | Struck beacon | Perth | Dam. prop. blades |
| Bellbro | May 22 | Grounded | Inchkeith | Serious int. dam. |
| Ben Read | May 22 | Collision | Yarmouth Rds. | Not stated |
| Bassano | May 26 | Fire | nr. Fremantle | Not stated |
| Bencleuch | May 28 | Hit dock entr. | Millwall | To stem |
| Breslau | May 29 | Leaking | Gallions Rds. | Sunk |
| Bruxelles Maritime | May 28 | Disabled | Fowey | Windlass broke |
| Begna | May 13 | Collision | Tynemouth | Slight |
| Barbara Marie | June 8 | Aground | Huelva | Not stated |
| Berlin | May 23 | Collision | Gjedser | Proceeded |
| Bruse Jarl | May 27 | Collision | Antwerp Rds. | Slight |
| Clauseus | May 7 | Collision | Ambrose Channel | Consi. dam. |
| Collingwood | May 17 | Grounded | nr. Detour | Leaking |
| Catherine | May 10 | Dock tilted | St. Thomas | Undam. |
| Camilla May Page | May 16 | Ashore | op. Hopewell Cape | Floated |
| Corby | May 20 | Disabled | nr. Falmouth | Not stated |
| Carspey | May 7 | Struck ob. | nr. Sourabaya | To prop. |
| Castlerock | May 8 | Collision | off Lizard | To steerer |
| Calluna | Apr. 28 | Collision | Fowey | Not stated |
| Craxness | Apr. 30 | Ashore | nr. Mozambique | Prob. total loss |
| Carlo Pisacane | May 8 | Aground | Parana River | Slight |
| Captain Fritz | May 17 | Sunk | Pensacola | Not stated |
| Coalinga | May 24 | Collision | San Pablo Bay | Slight dam. |
| Carolina | Apr. 8 | Fire | Trieste | To quarters |
| City of Washington | May 5 | Collision | Liverpool | To topsides |
| Caledonian | May 25 | Aground | Father Pt. | Extensive |
| Canadian Transporter | May 7 | Hvy. weather | Panama | Prop. broke |
| Commonwealth | May 27 | Fire | Staten Is. | Very slight |
| Corunna | May 27 | Struck snag | Thousand Islands | Not stated |
| Corpath | May 13 | Fouled pier | Newcastle | Not stated |
| Colin H. Livingston | June 3 | Disabled | Balboa | Steerer trb. |
| Coban | May 28 | Hit coal pier | Parrsboro | Cons. dam. |
| Chalister | June 7 | Fire | Suez | Not stated |
| Cretan | June 6 | On rocks | Nobska Pt. | To plates |
| Clearpool | May 10 | Collision | Buenos Aires | Not stated |
| Chrysolite | May 27 | Fire | Lerwick | Total loss |
| Condor | May 26 | Grounded | Feie | To bows, leak. |
| Cambridge | May 27 | Disabled | Suez | Plates, windlass |
| Clara | May 28 | Collision | River Elbe | To 1 plate |
| C.E.M.G., barge | May 21 | Collision | Rotherhithe | Stem broke |

| Name | Date | Nature | Place | Damage Resulting |
|---|---|---|---|---|
| Cananova | June 9 | Collision | off Jersey Coast | Bad to side |
| Cliffmore | May 30 | Ashore | Liverpool | Badly holed |
| Dios Irmaos | Apr. 28 | Explosion | Pernambuco | Capsized |
| Deansyde | May 2 | Disabled | Grimsby | Boil. trb. |
| Dunsoore | May 6 | Disabled | Tyne | Boil. leak. |
| Dumana | May 5 | Collision | Hamburg | Slight dam. |
| D. G. Kerr | May 24 | Collision | Soo Canal | To 7 plates |
| Dampen | May 16 | Grounded | Haugesund | Holed below water |
| Dagny | May 16 | Collision | Fredhikshavn | Badly dam. |
| Despina | May 14 | Grounded | Newport | Floated |
| Dorry | May 28 | Collision | Malta | To bows |
| Domala | May 30 | Disabled | Gibraltar | Def. mchy. |
| Eastern Guide | Apr. 26 | Fouled gate | Albert Edward Dock | Not stated |
| Elswick House | Apr. 21 | Ice | nr. Nicalaieff | Leaking |
| Eemland | May 5 | Disabled | Pernambuco | Crank web broke |
| Eugenia M. Moran | May 22 | Collision | off Quarantine | Hawser in prop. |
| Elisabeth Van Belgie | Apr. 30 | Collision | Buenos Aires | Not known |
| Eagle Boat 42 | June 2 | Grounded | City Island | Floated |
| Eugenia | May 8 | Grounded | Buenos Aires | Floated |
| E. M. Dalgas | May 7 | Disabled | At sea | Lost 2 blades |
| Eskbridge | May 30 | Disabled | nr. Philadelphia | Mchy. trb. |
| Eldon | May 17 | Fouled dock | Newcastle-on-Tyne | Not stated |
| Excelsior | May 19 | Aground | New Orleans | Not stated |
| Egema III | May 14 | Sprung leak | Antwerp | Sunk |
| Enggano | May 22 | Hit lock gate | Ymuiden | Not stated |
| Eastmoor | May 22 | Disabled | Port Sudan | Boil. valves |
| Falkenhorst | Apr. 30 | Collision | Hamburg | Unknown |
| Frank C. Ball | May 24 | Collision | Point Edward | Slight |
| Fenchurch | May 22 | Collision | New York | To plate |
| Frey | May 31 | Ashore | nr. Fremantle | Appar. undam. |
| Gulfland | May 5 | Disabled | Highlands | Eng. tbr. |
| General Richard Arnold | May 21 | Fire | Noank | Badly dam. |
| George G. Henry | May 18 | Grounded | Buenos Aires | Floated |
| G. F. Grammer | May 21 | Struck dock | Duluth | Holed bow |
| Garfield | May 4 | Collision | Puerto Colombia | Damaged |
| Glenconner | May 1 | Disabled | Toulon | Up. w'ks. |
| Gundred | May 9 | Collision | Terschelling | Not stated |
| Gratitude | May 8 | Collision | Thames | Foundered |
| Gannet | June 3 | Fire | Erie | Damaged |
| Garthgarry | May 18 | Hvy. weather | At sea | Dismasted |
| Glenamoy | May 13 | Ashore | 130 m. Shanghai | Holed frwd. |
| Gundreda | May 22 | Collision | Amsterdam | Slight to bow |
| Guide Me | May 22 | Ashore | Stroma | Badly |
| Gwladys | May 31 | Disabled | Falmouth | To mchy. |
| Handkerchief Light-Ship | Apr. 30 | Struck | Nantucket Sound | To stern |
| Halal | Apr. 28 | Disabled | Milford Haven | Gear dis. |
| Hoover & Mason | May 17 | Collision | Superior | Sunk |
| Hannover | May 5 | Fouled boat | Hamburg | Slight |
| Henry Ward | May 8 | Collision | Thames | Unknown |
| Harold Walker | May 7 | Hvy. weather | San Pedro | Topsides leaky |
| Huronic | May 24 | Collision | Point Edward | To stern |
| Hydrus | May 24 | Aground | Green Bay | Not dam. |
| Hyco | May 26 | Not stated | Buffalo | Sunk |
| Hoxbar | May 28 | Collision | off Virginia | Leak. badly |
| Hookwood | May 19 | Collision | Antwerp Rds. | Unknown |
| H.M.S. Flinders | May 14 | Collision | off Barry | Ap. undam. |
| Haugar | May 13 | Stranded | River Tees | None appar. |
| Hardanger | May 21 | Ice | Sydney | To bows |
| Hakuho Maru | May 21 | Ashore | Shimonoseki | None appar. |
| Havo | May 20 | Fire | Samarang | Small |
| Haig Rose | May 29 | Collision | Llanelly | To portside |
| Invincible | May 21 | Steerer dis. | Shimonoseki | Grounded |
| Isabela | May 31 | Collision | New York | Rud. dam. |
| Iberier | May 10 | Disabled | nr. Santos | To pumps |
| Inveresk | May 22 | Fog, ground'd | Gleman Is. | Unknown |
| J. E. O'Neil | May 3 | Collision | Reedy Is. | Slight, plate |
| James Blight | Apr. 30 | Struck | Nantucket Sound | Unknown |
| J. C. Wallace | May 16 | Hit dock | Rockport | To plates |
| John J. Haggerty | May 17 | Fire | New York | Not report'd |
| Joe S. Morrow | May 16 | Struck dock | Port Arthur | To bulkh'd. |
| J. S. Ashley | May 17 | Collision | Superior | To plates |
| Junior | May 7 | Disabled | nr. Cuxhaven | Motor dam |
| J. T. Hutchison | May 8 | Collision | Sault Ste. Marie | Not stated |
| Jason | May 19 | Fouled | Hamburg | Not stated |
| J. C. Hamlen | May 8 | Aground | Nantucket | Not stated |
| Jellicoe Rose | May 29 | Collision | Llanelly | Unknown |
| Katherine | May 6 | Collision | New York | Serious dam. |
| Kamouraska | May 9 | Aground | Big Glace Bay | Slight leak |
| Kinghorn | May 9 | Aground | Grand Canary Is. | Floated |
| Kroonland | May 8 | Disabled | Colon | Strbrd. eng. |



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# Late Flashes On Marine Disasters

## Brief Summaries of Recent Maritime Casualties— A Record of Collisions, Wrecks, Fires and Losses

| Name | Date | Nature | Place | Damage Resulting |
|---|---|---|---|---|
| Kiel | May 22 | Collision | Amsterdam | Unknown |
| Kennebunk | May 12 | Disabled | Philadelphia | Leaky |
| Kalomo | May 12 | Aground | off San Pedro de Macoris | Not stated |
| Koursk | May 21 | Disabled | New Orleans | Rivets loose |
| Kirsten Jensen | May 21 | Grounded | Cape May | Leaking |
| Kentucky | May 20 | Collision | Off Lizard | Unknown |
| Keats | May 28 | Collision | Randers | Not stated |
| Kittiwake | May 27 | Struck bridge | Manchester Canal | To 2 plates |
| Klipfontein | May 14 | Fouled barge | Hamburg | Not stated |
| L. L. Barth | May 13 | Hit dock | South Chicago | Not stated |
| Lalloc | May 19 | Fire | off Mindanao | Not stated |
| Louis G. | May 19 | Collision | Deepcut Canal | Sunk |
| Lillibonne | Apr. 28 | Grounded | off Waarde | No dam. |
| La Cresenta | Apr. 28 | Grounded | Buenos Aires | To plates |
| Lighter No. 218 | June 2 | Fire | New York | Slight |
| Lord Byron | May 6 | Grounded | Bari | Undam. |
| Laberge | May 19 | Aground | Woods Island | Not stated |
| Livonier | May 20 | Disabled | Dover | Steer. eng. |
| Lakewood | June 9 | Struck bank | Welland Canal | Strip. wheel |
| Lydia | May 14 | Grounded | Kalmar | Tanks leaky |
| Labrador | May 22 | Grounded | nr. Conchillas | Leaking |
| Lothar Bohlen | May 28 | Stranded | ab. Gallipoli | Not stated |
| Lochgoil | May 27 | Collision | Antwerp Rds. | Slight |
| Libys | May 21 | Collision | nr. Hull | Cons. to side |
| Lochee | May 30 | Collision | Leith | Badly |
| Mendocino | May 7 | Collision | Ambrose Channel | To bow |
| Martha | May 10 | Hit anchor | St. Clair River | No. 2 compt. |
| Maplebay | May 5 | Aground | nr. Cardinal | Not stated |
| Madoera | Apr. 29 | Disabled | nr. Vancouver | To eng. rm. |
| Midway | May 24 | Collision | San Pablo Bay | Slight |
| Misurata | May 2 | Struck bank | Port Said | Leak. slight |
| Manchurian Prince | May 28 | Collision | off Virginia | Bows & frpk |
| Magda | May 12 | Boiler burst | River Ems | Sunk |
| Merriura | May 20 | Struck obs. | nr. Sydney | To prop. |
| Moreton Bay | May 20 | Grounded | Gravesend | Floated |
| Marques de Campo | May 12 | On rocks | Casablanca | Prob. total |
| Manhem | May 14 | Hvy. weather | At sea | Damaged |
| Monte Video | May 14 | Disabled | Callao | Crank pin |
| Madal | May 16 | Disabled | Suez | Slight to eng. |
| Minnie de Larrinaga | May 15 | Collision | Gibraltar | Damaged |
| Mercedes | May 18 | Disabled | Cape Cod | Prop. shaft |
| Maia | June 4 | Collision | nr. Lorain | Not stated |
| Mary | June 5 | Disabled | Sandy Hook | Eng. trb. |
| Mentor | May 21 | Touched gr'd. | Venice | Frpk. leak. |
| Manchester City | May 21 | Struck wharf | La Plata | Unknown |
| Marjorie Mellonie | May 21 | Collision | Yarmouth | To stern |
| Milcovul | May 23 | Ashore | Kallundborg | Undam. |
| Marvel | May 24 | Ashore | Nargen Is. | Holds leak. |
| Maryland | May 17 | Fouled spout | Whitehill Pt. | Not stated |
| Margaret Ham | May 27 | Collision | Barry | Slight |
| Niagara | May 10 | Ashore | Mackinaw Pt. | Not dam. |
| Nazareno | June 2 | Aground | Columbia River | Steer. trb. |
| Nirvana | Apr. 30 | Struck quay | Cardiff | To port bow |
| Nordenham | May 5 | Collision | off McArthur's Head | Not stated |
| Naaldijk | May 8 | Fouled crane | Hamburg | Slight |
| N. F. Leopold | May 8 | Collision | Sault Ste. Marie | Plates dam. |
| Neko | May 15 | Aground | Cape San Thome | Possi. salv. |
| Nirefs | May 16 | Aground | Scaw | Floated |
| Naitaga Maru | May 16 | Collision | Inland Sea | To bows |
| Nishu Maru | May 9 | Stranded | off Tonnai Karafuto | Filled |
| Nordcaper | May 12 | Fog, coll. | S. Portland | Not stated |
| Niagara | May 14 | Ashore | Mackinac Pt. | No dam. |
| Northton | May 30 | Fouled tug | Newcastle | Not stated |
| Orinoco | May 18 | Gale | Lake Superior | Sunk |
| Ootmarsum | May 1 | Aground | Rosario | Not stated |
| Oddersjaa | May 2 | Disabled | nr. Grimsby | Motors dis. |
| Oceana | May 8 | Disabled | Lundy | Eng. trb. |
| Orwell | May 7 | Hvy. weather | nr. S. Orkney | Dk. tk. leak. |
| Orange River | May 15 | Collision | Dunkirk | Not stated |
| Ontario | May 8 | Fire | Block Island | Slight |
| Orca | May 9 | Collision | St. Lawrence River | Not stated |
| Orvieto | May 15 | Grounded | Brisbane | Slight |
| Ossag | May 21 | Disabled | Hamburg | To mchy. |
| Ormonde | May 21 | Collision | Colombo | Port turb. |
| Philip Minch | May 16 | Hit obstrc. | Duluth | To shaft |
| P. W. Sherman | May 11 | Disabled | Brush Point | Lost rud. |
| Pengam | Apr. 28 | Collision | Fowey | To bridge |
| Peter | May 5 | Not stated | Kaiser Wilhelm Canal | Damaged |
| President Madison | May 1 | Fire | Shanghai | Undamaged |
| Parracombe | May 6 | Collision | Barry | Slight |
| Pabjune | May 28 | Aground | nr. Welland | To 6 plates |
| Pere Marquette 17 | June 2 | Collision | Ludington | Damaged |
| Pentowy | May 19 | Fire | Port Said | Not stated |
| Polarhavet | May 14 | Grounded | Otterhaellen | Not stated |
| Panaghis | May 12 | Collision | Antwerp Rds. | To poop |
| Paul | May 12 | Touched ground | Kaiser Wilhelm Canal | Slight |
| Premuda | May 12 | Grounded | Sulina | W'dl's broke |
| Pleiades | May 14 | Collision | off Barry | Dismasted |

| Name | Date | Nature | Place | Damage Resulting |
|---|---|---|---|---|
| Pacific | May 21 | Collision | Colombo | To plates |
| Parton | May 23 | Collision | off Swansea | Not stated |
| Petersham | May 23 | Grounded | Buenos Aires | Heavy |
| Queens | May 7 | Fire | New York | Not stated |
| Queen City | June 9 | Struck | Hay Lake | Leaking |
| Rosalind | May 5 | Collision | New Bedford | Slight |
| R. R. Govin | May 8 | Ashore | nr. Bodies Island | Prob. loss |
| Ruby | May 20 | Aground | nr. Iroquois | Not stated |
| Rochester | May 19 | Disabled | nr. Paulsboro | To mchy. |
| Ricardo R. | Apr. 30 | Struck bar | Pravia | Leaking |
| Ramar | May 8 | Hit quay | Cardiff | Dam. prop. |
| Robert Marguerite | May 9 | Ashore | Brest | Leaky |
| Roanoke | June 1 | Ashore | Narraganset Bay | Floated |
| Romo | May 16 | Collision | Fredrikshavn | Unknown |
| Robert Fulton | June 4 | Collision | nr. Lorain | To rud. |
| Research | May 13 | Fouled landing | Newcastle-on-Tyne | Not stated |
| Rollow | May 26 | Disabled | Brunsbuttelkoog | Slight to eng. |
| Rey | May 25 | Gale, ashore | Fremantle | Prob. no dam |
| Rival | May 23 | Collision | Gjedser | Stem broke |
| Skippack | May 3 | Collision | Reedy Is. | Sunk |
| Stone Horse Shoal Lightship | May 5 | Struck | New Bedford | Slight dam. |
| State of Ohio | May 21 | Fire | Cleveland | Total loss |
| Sixaola | May 22 | Collision | off Quarantine | Plates dam. |
| Spreewald | Apr. 28 | Grounded | nr. Emden | Not stated |
| Shannon | Apr. 27 | Athwart pier | Sheerness | Slight |
| Sea Weather | Apr. 29 | Disabled | nr. Ramsgate | Lost rud. |
| St. Cyrille | May 1 | Disabled | Cardiff | Steerer dis. |
| Scottish Bard | May 9 | Disabled | Ormes Head | Eng. trb. |
| Sucubaco | May 26 | Disabled | Quarantine | List to strbd. |
| Siamese Prince | May 26 | Fire | New York | Cargo dam. |
| Swinburne | Apr. 30 | Collision | Buenos Aires | Uninjured |
| Sirte | Apr. 28 | Hvy. weather | Rotterdam | Lost anchor |
| Socony No. 74 | May 31 | Collision | New York | Consi. dam. |
| Steel Voyager | June 3 | Disabled | New York | Steer. trb. |
| South River | May 29 | Fire | New York | Not stated |
| Satsuma | May 12 | Disabled | Sherringham Pt. | Boiler trb. |
| Seenixe | May 19 | Prop. fouled | Holtenau | Slight |
| Spectator | May 19 | Fire | Poplar | Slight |
| Schleswig Holstein | May 12 | Ashore | North Goodwins | Slight |
| Siegmund | May 12 | Hit obs. | Kaiser Wilhelm Canal | Undam. |
| Surrey | May 13 | Def. rivets | Colombo | Water in aftpk. |
| Stanwell | May 14 | Aground | Rotterdam | Floated |
| Saumur | May 14 | Ice | St. Pierre | Leaky |
| St. Agnes | May 21 | Collision | off Hull | Slight |
| Sirius | May 15 | Disabled | Southampton | Eng. room |
| Sunbeam | May 21 | Collision | Rotherhithe | None appar. |
| Speaker | May 21 | St. pipe broke | Liverpool | Not stated |
| Sievar | May 19 | Grounded | Gothenburg | 1 tank leaky |
| Sisak | May 26 | Ashore | Bahia de Caraquez | Not stated |
| Southriner | May 28 | Fire | Brooklyn | Not stated |
| Skogstad | May 27 | Collision | Barry | Not stated |
| Sunoil | June 10 | Collision | River Mersey | Unknown |
| Strognvald | May 30 | Collision | Leith | Stern & plates |
| Treneglos | May 1 | Disabled | At sea | Lost prop. |
| Trevier | Apr. 28 | Ashore | Rosario | Not stated |
| Trevide | May 1 | Grounded | Martin Garcia | Remains |
| Turret Court | Apr. 30 | Collision | Sydney | Hawse-pipe |
| Tritonia | May 19 | Ashore | Albern Canal | Floated |
| Tongrier | May 15 | Collision | Gibraltar | Damaged |
| Trane | May 15 | Not stated | Raz de Sein | Sunk |
| Tyne Prince | May 13 | Collision | Tynemouth | Slight |
| Trevince | May 23 | Disabled | Falmouth | Crank shaft |
| Tenbergen | May 14 | Fire | Bombay | Not stated |
| Ulv | Apr. 28 | Disabled | Louisburg | To pist. |
| Urania | May 5 | Collision | Liverpool | Badly dam. |
| Viking | May 5 | Ashore | Providence | Floated |
| Ville d'Arras | Apr. 28 | Hit quay | Havre | Plates dam. |
| Volharding | May 9 | Collision | Terschelling | Strbrd. dam. |
| Valnegra | May 8 | Aground | Buenos Aires | Proceeded |
| Volturno | May 8 | Aground | Buenos Aires | Proceeded |
| Virginia | June 2 | Collision | Ludington | Damaged |
| Vendor | May 4 | Ashore | Cape Hogan | Prob. undam |
| Van Heemskerk | May 16 | Stranded | nr. Kendari | Leaking |
| Ville de Djibouti | May 21 | Disabled | Dakar | To mchy. |
| Vincent A. White | June 9 | Collision | off Jersey Coast | Lost bowsprit |
| West Hobomac | May 3 | Fire | New Orleans | Not stated |
| Watuka | Apr. 30 | Collision | Sydney | Holed in bow |
| West Nohna | May 6 | Fire | Brooklyn | Not stated |
| William B. Schiller | May 10 | Disabled | nr. Milwaukee | Lost rud. |
| Williams | May 13 | Hit rock | Sandusky | Rud. dam. |
| William Livingstone | May 51 | Disabled | Port Huron | Mchy. dis. |
| Willhilo | May 13 | Grounded | Reedy Island | Undam. |
| Westpool | May 18 | Touched obs. | Boston | Floated |
| Walt. A. Luckenbach | May 29 | Struck bar | San Francisco | Not stated |



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# Marine Business Statistics Condensed

## Record of Traffic at Principal American Ports for Past Year

### New York

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 466 | 1,811,769 | 520 | 2,046,833 |
| April | 469 | 1,814,848 | 504 | 1,958,579 |
| March | 418 | 1,517,503 | 459 | 1,694,905 |
| February | 378 | 1,467,340 | 445 | 1,738,675 |
| January | 370 | 1,513,056 | 434 | 1,749,172 |
| December, 1923. | 383 | 1,507,914 | 445 | 1,658,423 |
| November | 418 | 1,768,503 | 461 | 1,976,338 |
| October | 462 | 1,868,446 | 489 | 1,993,758 |
| September | 428 | 1,818,981 | 477 | 1,978,023 |
| August | 468 | 1,855,045 | 520 | 2,039,732 |
| July | 462 | 1,799,886 | 490 | 1,962,302 |
| June | 466 | 1,799,908 | 518 | 2,075,654 |
| May | 500 | 1,849,548 | 501 | 1,874,019 |

### Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 99 | 219,934 | 76 | 216,237 |
| April | 82 | 195,774 | 82 | 232,501 |
| March | 80 | 203,260 | 66 | 190,240 |
| February | 86 | 224,309 | 64 | 186,373 |
| January | 60 | 151,915 | 53 | 155,550 |
| December, 1923. | 78 | 227,055 | 64 | 190,644 |
| November | 78 | 198,122 | 54 | 135,077 |
| October | 93 | 241,457 | 64 | 178,279 |
| September | 92 | 236,293 | 74 | 182,700 |
| August | 97 | 251,295 | 73 | 180,771 |
| July | 109 | 269,158 | 77 | 177,700 |
| June | 102 | 257,507 | 69 | 191,633 |
| May | 105 | 267,441 | 82 | 207,209 |

### Boston

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 122 | 260,300 | 100 | 219,216 |
| April | 100 | 282,324 | 63 | 165,557 |
| March | 89 | 262,438 | 50 | 132,863 |
| February | 99 | 307,627 | 44 | 133,504 |
| January | 84 | 250,335 | 47 | 116,832 |
| December, 1923. | 102 | 285,125 | 48 | 130,115 |
| November | 91 | 305,230 | 60 | 166,404 |
| October | 118 | 354,296 | 59 | 156,940 |
| September | 117 | 307,719 | 79 | 185,726 |
| August | 126 | 302,391 | 86 | 178,706 |
| July | 146 | 337,033 | 85 | 174,106 |
| June | 176 | 319,135 | 128 | 176,853 |
| May | 159 | 328,183 | 108 | 176,845 |

### Portland, Me.

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 19 | 33,970 | 21 | 40,832 |
| April | 17 | 75,406 | 21 | 91,045 |
| March | 23 | 79,648 | 22 | 72,517 |
| February | 20 | 67,476 | 22 | 69,594 |
| January | 22 | 56,749 | 23 | 59,235 |
| December, 1923. | 29 | 104,724 | 26 | 100,583 |
| November | 25 | 80,910 | 24 | 74,849 |
| October | 19 | 39,456 | 15 | 32,471 |
| September | 9 | 22,724 | 10 | 25,582 |
| August | 11 | 24,155 | 8 | 18,838 |
| July | 8 | 18,148 | 9 | 17,770 |
| June | 7 | 22,613 | 8 | 25,941 |
| May | 8 | 16,470 | 11 | 17,781 |

### Providence

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 10 | 23,795 | 4 | 17,931 |
| April | 9 | 30,592 | 6 | 18,959 |
| March | 7 | 33,895 | 6 | 23,517 |
| February | 10 | 39,388 | 8 | 35,236 |
| January | 8 | 33,215 | 7 | 28,927 |
| December, 1923. | 12 | 43,345 | 7 | 23,294 |
| November | 5 | 23,038 | 6 | 15,700 |
| October | 8 | 30,248 | 9 | 24,821 |
| September | 9 | 31,514 | 12 | 41,646 |
| August | 9 | 34,323 | 9 | 27,664 |
| July | 10 | 25,155 | 7 | 29,316 |
| June | 7 | 25,466 | 5 | 17,238 |
| May | 9 | 31,731 | 8 | 38,870 |

### Baltimore

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 122 | 369,797 | 126 | 378,501 |
| April | 112 | 329,900 | 106 | 316,159 |
| March | 98 | 297,869 | 110 | 331,665 |
| February | 98 | 310,158 | 107 | 335,108 |
| January | 85 | 270,169 | 99 | 315,804 |
| December, 1923. | 117 | 365,142 | 110 | 354,229 |
| November | 90 | 280,617 | 91 | 279,278 |
| October | 96 | 285,871 | 95 | 297,566 |
| September | 94 | 292,315 | 99 | 297,965 |
| August | 100 | 303,073 | 92 | 262,306 |
| July | 130 | 390,465 | 137 | 395,206 |
| June | 140 | 407,872 | 135 | 406,138 |
| May | 156 | 476,041 | 160 | 468,248 |

### Norfolk and Newport News

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 27 | 73,846 | 94 | 269,752 |
| April | 27 | 82,382 | 83 | 234,550 |
| March | 19 | 55,501 | 81 | 243,065 |
| February | 36 | 105,233 | 90 | 259,085 |
| January | 31 | 96,074 | 79 | 249,575 |
| December, 1923. | 30 | 86,444 | 75 | 219,325 |
| November | 24 | 65,263 | 83 | 239,807 |
| October | 18 | 56,473 | 65 | 188,805 |
| September | 14 | 37,823 | 65 | 184,646 |
| August | 36 | 113,070 | 81 | 244,366 |
| July | 41 | 108,465 | 108 | 296,197 |
| June | 36 | 107,218 | 66 | 190,218 |
| May | 62 | 188,850 | 93 | 286,420 |

### Galveston

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| March, 1924 | 57 | 176,379 | 88 | 287,398 |
| February | 55 | 152,950 | 80 | 236,761 |
| January | 70 | 210,110 | 96 | 317,105 |
| December, 1923. | 71 | 219,767 | 106 | 313,231 |
| November | 61 | 172,824 | 95 | 301,148 |
| October | 83 | 209,343 | 108 | 334,544 |
| September | 64 | 164,854 | 100 | 290,715 |
| August | 69 | 172,330 | 92 | 257,371 |
| July | 70 | 178,601 | 77 | 198,200 |
| June | 77 | 178,013 | 82 | 209,893 |
| May | 78 | 181,759 | 97 | 256,745 |
| April | 65 | 162,317 | 77 | 209,388 |
| March | 58 | 170,841 | 97 | 287,278 |

### Key West

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 98 | 110,675 | 95 | 104,661 |
| April | 92 | 95,435 | 85 | 90,677 |
| March | 103 | 112,577 | 89 | 97,276 |
| February | 83 | 83,118 | 78 | 84,678 |
| January | 69 | 79,224 | 70 | 82,775 |
| December, 1923. | 71 | 88,377 | 71 | 91,121 |
| November | 80 | 97,642 | 85 | 97,599 |
| October | 83 | 103,328 | 82 | 95,506 |
| September | 69 | 77,687 | 74 | 84,612 |
| August | 80 | 94,591 | 82 | 93,028 |
| July | 88 | 96,514 | 86 | 97,260 |
| June | 93 | 105,045 | 93 | 102,123 |
| May | 97 | 102,033 | 95 | 101,422 |

### Portland, Oreg.

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| April, 1924 | 26 | 90,286 | 33 | 115,504 |
| March | 27 | 103,891 | 32 | 118,406 |
| February | 23 | 85,301 | 35 | 130,528 |
| January | 12 | 47,848 | 25 | 97,674 |
| December, 1923. | 30 | 99,748 | 34 | 120,487 |
| November | 30 | 113,362 | 34 | 120,487 |
| October | 21 | 78,191 | 48 | 174,275 |
| September | 23 | 86,194 | 41 | 138,470 |
| August | 17 | 64,218 | 31 | 106,478 |
| July | 19 | 66,048 | 24 | 86,474 |
| June | 22 | 87,147 | 25 | 87,419 |
| May | 16 | 58,889 | 21 | 72,663 |
| April | 17 | 62,287 | 22 | 84,940 |

### New Orleans

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 260 | 703,950 | 264 | 696,397 |
| April | 249 | 646,315 | 262 | 653,740 |
| March | 225 | 542,040 | 222 | 538,642 |
| February | 217 | 604,411 | 227 | 610,455 |
| January | 217 | 595,087 | 220 | 588,703 |
| December, 1923. | 239 | 632,193 | 231 | 634,300 |
| November | 216 | 575,102 | 218 | 605,923 |
| October | 226 | 605,211 | 239 | 649,791 |
| September | 205 | 548,914 | 169 | 444,881 |
| August | 235 | 605,671 | 249 | 639,802 |
| July | 237 | 602,017 | 227 | 587,966 |
| June | 230 | 584,271 | 226 | 572,211 |
| May | 221 | 550,817 | 237 | 603,128 |

### San Francisco

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 63 | 226,130 | 62 | 197,082 |
| April | 52 | 161,682 | 72 | 172,155 |
| March | 57 | 190,588 | 62 | 210,134 |
| February | 53 | 185,226 | 59 | 211,896 |
| January | 65 | 215,020 | 68 | 229,206 |
| December, 1923. | 63 | 209,105 | 68 | 234,960 |
| November | 69 | 281,081 | 70 | 243,152 |
| October | 56 | 205,175 | 71 | 249,035 |
| September | 43 | 165,798 | 63 | 209,930 |
| August | 64 | 208,625 | 65 | 224,918 |
| July | 68 | 244,530 | 58 | 189,348 |
| June | 59 | 204,204 | 65 | 227,566 |
| May | 64 | 230,778 | 69 | 244,321 |

### Seattle

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 46 | 188,853 | 43 | 177,581 |
| April | 46 | 196,591 | 53 | 220,763 |
| March | 57 | 236,620 | 45 | 191,152 |
| February | 48 | 189,146 | 54 | 213,851 |
| January | 57 | 233,002 | 60 | 242,577 |
| December, 1923. | 48 | 206,466 | 52 | 224,112 |
| November | 48 | 199,115 | 46 | 191,022 |
| October | 39 | 184,717 | 47 | 200,668 |
| September | 32 | 142,052 | 40 | 159,006 |
| August | 39 | 173,885 | 37 | 163,188 |
| July | 30 | 148,607 | 32 | 149,239 |
| June | 36 | 147,186 | 39 | 184,732 |
| May | 29 | 133,752 | 37 | 159,393 |

### Mobile

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 74 | 146,668 | 80 | 157,655 |
| April | 80 | 158,109 | 70 | 133,920 |
| March | 83 | 178,637 | 84 | 182,491 |
| February | 79 | 168,182 | 86 | 174,517 |
| January | 81 | 158,416 | 83 | 159,081 |
| December, 1923. | 83 | 165,163 | 75 | 156,579 |
| November | 74 | 148,297 | 78 | 145,886 |
| October | 68 | 123,532 | 60 | 120,606 |
| September | 60 | 126,005 | 52 | 105,247 |
| August | 64 | 191,968 | 67 | 146,191 |
| July | 73 | 136,242 | 66 | 123,405 |
| June | 64 | 136,311 | 61 | 132,863 |
| May | 74 | 167,509 | 74 | 174,851 |

### Houston

(Exclusive of Domestic)

| Month | —Entrances— No. ships | Net tonnage | —Clearances— No. ships | Net tonnage |
|---|---|---|---|---|
| May, 1924 | 72 | 64,937 | 71 | 362,350 |
| April | 78 | 76,466 | 73 | 337,757 |
| March | 88 | 113,064 | 87 | 411,715 |
| February | 62 | 82,601 | 65 | 228,178 |
| January | 60 | 55,037 | 58 | 267,066 |
| December, 1923. | 74 | 73,876 | 70 | 304,359 |
| November | 84 | 83,490 | 82 | 350,703 |
| October | 75 | 24,076 | 70 | 268,416 |
| September | 66 | 58,704 | 61 | 92,664 |
| August | 58 | 43,258 | 56 | 211,348 |
| July | 48 | 42,447 | 48 | 177,666 |
| June | 49 | 72,875 | 50 | 197,081 |
| May | 54 | 60,640 | 50 | 182,691 |



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# Practical Ideas for the Engineer

## Safety Valves for Marine Boilers—Their Function, Design, Use and Care

AS THE name implies, safety valves are required on all boilers as a means of relieving the pressure when, according to law, it reaches the maximum allowed with safety for any particular unit. The board of supervising inspectors of steamboats regulates the greatest working pressure under which every marine boiler may be operated and it also approves the design and construction of marine types of safety valves. After installation and at periodical inspections of the boilers during the life of the ship, the safety valves are set and locked at the proper tension to blow off at the maximum allowable pressure.

In the old days of steamboating on the Mississippi river, described so well by Mark Twain, with the keenest sort of rivalry existing between river boats, times were when to get more steam pressure in order to get more speed, the safety valves were deliberately loaded away beyond their official setting, in

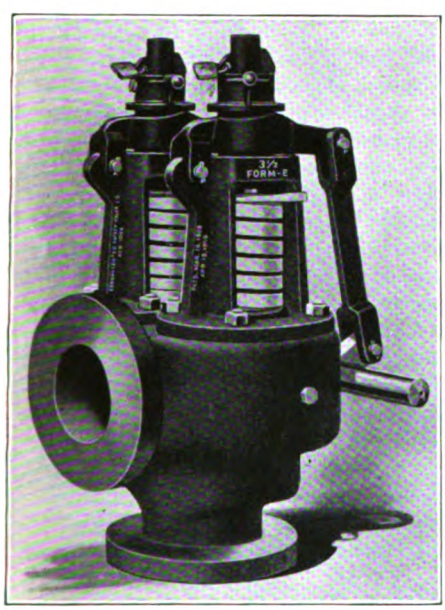

FIG. 1—MARINE TYPE DUPLEX SAFETY VALVE

defiance of safety to property and lives of crew and passengers. This pioneering spirit along with the old type of ball and lever, safety valves have had their day and are no more. The spring pop type of safety valve is now practically in universal use and great care prevails in observance of the law in the setting of the valves to blow off at the permissible maximum pressure. A part of this improvement is no doubt due to the fact that the present spring pop type of valve can be quite effectively locked at the required setting, whereas it was impossible to do so with the old type of ball and lever valve.

Damage to the structure of the boiler may result and the lives of the crew may be endangered as a result of improperly working or overloaded safety valves. With all the safeguards thrown around the design, construction and setting of this vital adjunct to the boiler, the greatest care is necessary on the part of the builders and the owners of the ship to see that only the best and most reliable types are used. One instance will illustrate the importance of the closest inspection in the initial choice.

### Cost of Faulty Valve

A ship leaving New York on a voyage to the Argentine when off the northern coast of Brazil blew out the body casing of the safety valve on one boiler. As a result, the vessel was delayed over two weeks in time and put to a considerable outlay of money by the necessity of having to alter her course to proceed to the nearest port for repairs. It was found on inspection of the shattered valve, made after the return to New York, that in the casting of the casing the core had evidently shifted so that while one side was over the proper thickness the other was much under, and was so thin that it had blown out at a pressure below the regular setting of the valve for blow off. A severe condition of water hammer may have occurred but the fact remains that the structure of the valve was faulty and weak.

In the industrial development of the United States a factor of great importance has been the custom of specialization in those products where the quantity required warranted such a policy. As a result, great resources in scientific skill, experimentation and practical experience have been applied to the perfection of universally needed apparatus. Exactly this condition has accrued to the benefit of the users of safety valves both in quality and in lowering the cost. A certain blind confidence (and justifiably so) exists on the part of shipbuilders and owners that everything humanly possible has been done in design, materials and care of construction to insure proper operation and safety in the manufacture of this important equipment. The Consolidated Safety Valve Co., Bridgeport, Conn., a concern of long standing and high reputation and specialists in the manufacture of safety valves, affords an excellent example of the benefits derived by industry due to concentration on one line of equipment.

The improved spring pop type of safety valve became possible through the invention of the Richardson adjusting ring. These patents were acquired by the manufacturer of the valves shown in

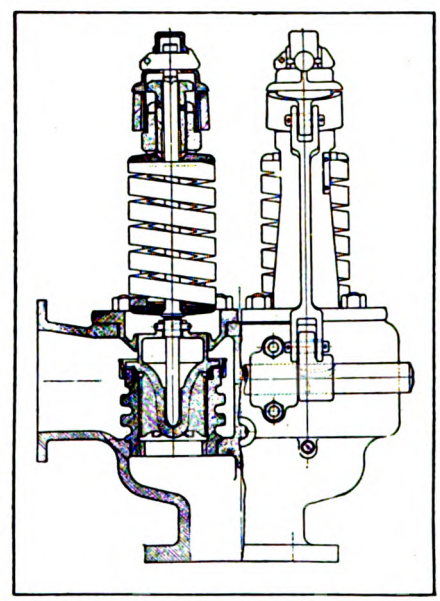

FIG. 2—SECTION OF MARINE TYPE, DUPLEX SAFETY VALVE

the accompanying illustrations and though the original patents have long since expired this company has continued a leader in this field of equipment. Figs. 1 and 2 show the marine spring pop type, duplex safety valve, a design quite generally in use for marine boilers. Single type safety valves of similar design as shown in Fig. 3 are also used.

For marine as well as stationary work, reliability, capacity and economy in the order stated are all important to the proper operation of a safety valve, and if these features are built into a valve all other considerations have been taken care of. Either of the valves shown in the accompanying illustrations should be mounted directly on a pad on top of the drum which will insure a sufficiently large supply of dry steam to operate the valve properly. As the pressure in the boiler reaches the pressure at which relief is to take place, the spring is compressed and the valve opens. The valve



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will continue relieving the pressure until it drops to the amount of blow down desired.

To effect these two functions, the inlet to the valve and the valve area, the tension of the spring, the outlet size and the position of the adjusting ring, must bear correct relations to the evaporative capacity of the boiler and the pressure of steam at which relief is to take place. Given all the characteristics of the boiler and the maximum allowable pressure, the manufacturer is able to furnish the proper safety valve.

Referring to the accompanying illustrations, a coiled spring of square section stock, of ample proportions to withstand the highest steam pressures with large factors of safety in both stress and compression, is mounted above and below on two ball and socket bearings of the same size, which allow the spring ends to freely assume their normal position. The spring is exposed and consequently is not in contact with the hot steam which on account of the corrosive effect would shorten its life. By the cup design of the valve disk, the spindle bearing at the bottom end is far below the seat of the valve and thus, in conjunction with six broad guides on the disk or feather that centers it in the seat bushing, correctly seats the valve.

The amount of blow down or blow back desired, that is, the reduction from the popping pressure before the closing of the valve, is regulated by means of the Richardson adjusting ring. This ring is flared and screwed to the top of the seat bushing. By raising this ring, the blow down is increased by slowing up the gradual closing of the valve due to the additional back pressure, and by lowering this ring the blow down is decreased, by allowing the valve to close more quickly.

If the adjusting ring is improperly regulated the valve may rumble or the blow back may be much higher than desired. The first instance is an indication that there is not a sufficient amount of back pressure and the adjusting ring should be raised, thus increasing the blow down. In the second instance, the adjusting ring should be lowered in order to give less blow down. For ordinary service with pressures from 100 to 300 pounds it is advisable to have a blow back of approximately 4 per cent of the working pressure, to give proper action and a high lift. This gives adequate capacity and prevents permanent lodgment of particles of scale on the seat likely to be the case with a low lift. Adjustment of the popping pressure is made by moving the nut which bears against the ball socket washer on top of the spring. When it is desired to increase this pressure, the nut is set down. To decrease the pressure, the nut is eased up. A check nut locks the adjusting nut in any position. The springs are only adapted for a change of four to five pounds either higher or lower than the pressure set at the factory. If greater changes are required, it is necessary to obtain new springs, adjusting rings and spring washers.

Materials used in the construction of the valve must be of the highest quality. For saturated steam, the base and top is cast iron, and the feather bronze. For superheated steam, the base and top is

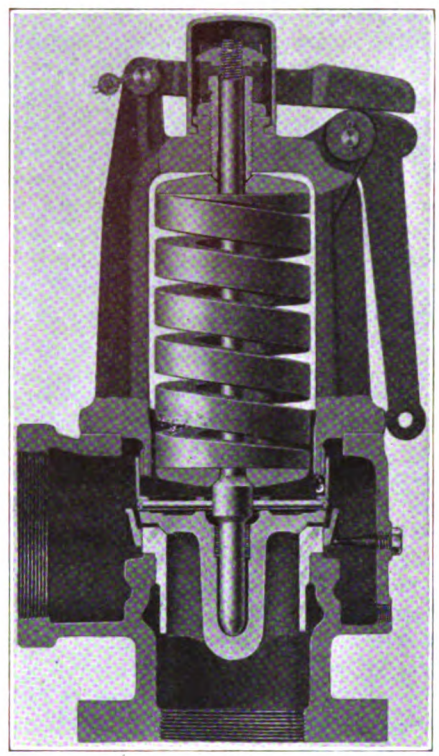

FIG. 3—SINGLE TYPE SAFETY VALVE

cast steel and the feather nickel. The spring is crucible steel, the seat bushing nickel, the spindle steel, the levers and cup malleable iron, and all other parts not specifically mentioned above, are bronze whether for saturated or superheated steam.

In the older type valves, the seats were ground with a balling tool so that even should the disk become slightly cocked the valve would still seat evenly. In recent years this design has been changed, so that now valves are furnished with seats beveled to 45 degrees on the base and 44 degrees on the disk. The ground portion consequently comes at the lower part of the bevel. To operate at its best, the valve should be ground until this bearing is about one-third the width of the seat. In repairing safety valves at any time, it is necessary to bear in mind that all parts should be machined so that the original relationship of the seats, disks and the huddling chamber remains the same. It is only by maintaining the proper relative positions of these parts that it is possible to maintain a valve at its highest point of efficiency.

Exhaust piping from the safety valves should be amply large to free the valve at full capacity without building up a back pressure. The outlet from the valve is made one-half inch larger in diameter than the inlet, and from this point the exhaust piping should be at least as large and free of all obstructions. It is advisable completely to relieve the body of the valve from the weight of the exhaust piping, and from the shocks produced at the time the valve discharges and so prolong the useful life of the valve. It is of the utmost importance to see that drains from the valve casings and from suitable points in the exhaust line are free and clear and unobstructed by any back pressure. Accumulation of water due to condensation of steam in the valve body or in the exhaust line if not carried off will create a condition of water hammer which might cause serious trouble in damage to the valve.

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Masters of the shipping board's express liners operating between Seattle and the Orient have many trials and troubles but they claim that the antics of Chinese junks in Oriental waters give them nervous prostration. According to Chinese superstition, it is good luck or "good joss" for a junk to cross the bows of a big overseas steamship. However, the captains of the larger vessels have to exercise the utmost care to prevent running down the Chinese craft. Even a slight glancing blow is regarded by the Chinese as indicative of additional good luck. Each junk has two light blue eyes painted on each side of the bow and as they approach with their black sails,and elevated sterns they give one a creepy feeling, especially if that person is a high strung master mariner in charge of a fast passenger steamer. In typhoon weather, the captains of the junks set off firecrackers, burn incense and utter a few magic words to ward off the evil spirits of the approaching storm.

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The Robert June engineering management corporation, Detroit, which handles industrial advertising, sales development and engineering management, is moving from its present address at 8938 Linwood avenue to 8835 Linwood avenue. This move, which is the second in six months, more than doubles the office space and is made in order to provide better facilities for service to the organization's clients, and to provide more room for the organization's research and data files and engineering library

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## Bid on New Turbine Ship for Porto Rico Line

Bids are again being requested for a new passenger freight ship for the New York-Porto Rico Line, the vessel being somewhat larger than the one proposed last year. Early in 1923, bids were received on a 428-foot ship of the 3-deck, hurricane deck, coastwise type, with Parsons turbines. The present plans, it is understood, call for a ship about 450 feet in length to cost around $2,500,000. She will be propelled by turbine engines, supplied with steam by Scotch boilers burning oil for fuel. One feature will be refrigerated cargo space, particularly for the carriage of citrus fruits. Accommodations will be provided for 300 first-class passengers and a number of second-class passengers.

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Houlder, Weir & Boyd, Inc., steamship agents, 24 State street, New York put on the berth for Manila, Hong Kong and Shanghai, via Panama canal the new twin-screw diesel engine motor vessel INVERBANK, scheduled to sail from New York, June 27. This ship is the first of twenty-one of the same type, being built in Great Britain for the Bank Line Ltd., for whom Houlder, Weir & Boyd, Inc., are agents.

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The plant of the Lake Torpedo Boat Co., Bridgeport, Conn., was sold at auction June 17 in five parcels for an aggregate sum of $39,500. M. G. Belding, New York, Jacob Grossman, Quincy, Mass., and Isaac Flesher, Bridgeport, bought the plant buildings and the shipyard. On the last tax list of the city, the Lake company was assessed for $842,437.

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# Ocean Freight Rates

**Per 100 Pounds Unless Otherwise Stated**

**Quotations Corrected to June 19, 1924, on Future Loadings**

**NOTE: FREIGHT RATES GENERALLY HAVE WEAKENED**

**Active Movement in refined sugar to Spain @ $6.50 a ton**

| New York to | Grain | Provisions | Cotton (H. D.) | Flour | General cargo cu. ft. | General cargo 100 lbs. | ††Finished steel | REMARKS Freight Offered |
|---|---|---|---|---|---|---|---|---|
| Liverpool | 2s 0d‡ | $0.50 | $0.30 | $0.17 | $0.40 | $0.75 | $7.00T | Slow |
| London | 2s 0d‡ | 0.50 | 0.30 | 0.17 | 0.40 | 0.75 | 7.00T | Slow |
| Christiania | $0.22 | 0.45 | 0.40 | 0.27 | 0.42½ | 0.85 | 8.00T | Quiet |
| Copenhagen | 0.20 | 0.45 | 0.40 | 0.26 | 0.42½ | 0.85 | 8.00T | Quiet |
| Hamburg | 0.08 | 0.35 | 0.32½ | 0.19 | 0.37½ | 0.75 | 8.00T | Slow |
| Bremen | 0.08 | 0.35 | 0.32½ | 0.19 | 0.37½ | 0.75 | 8.00T | Slow |
| Rotterdam and Amsterdam | 0.08 | 0.30 | 0.30 | 0.18 | 0.35 | 0.70 | 7.50T | Quiet |
| Antwerp | 0.08 | 0.32½ | 0.30 | 0.18 | 0.35 | 0.70 | 7.00T | Slow |
| Havre | 0.12 | 0.50 | 0.30 | 0.27½ | 0.40 | 0.75 | 8.00T | Slow |
| Bordeaux | 0.12 | 0.50 | 0.30 | 0.27½ | 0.40 | 0.75 | 8.00T | Slow |
| Barcelona | 0.20 to 0.25 | 12.00T | 0.30 | 10.00T | —12.00T— | | 10.00T | Fair |
| Lisbon | 0.20 | 0.65 | 0.40 | 7.00T | —20.00T— | | 7.00T | Fair to Good |
| Marseilles | 0.14 | 0.55 | 0.50 | 5.60T | —20.00T— | | 5.00T | Slow |
| Genoa | 0.15 | 0.50 | 0.40 | 0.27 | 0.40 | 0.80 | 6.00T | Good |
| Naples | 0.15 | 0.50 | 0.40 | 0.27 | 0.40 | 0.80 | 6.00T | Fair |
| Constantinople | 0.23 | 17.00T | 0.75 | 0.32½ | —20.00T— | | 9.00T | Quiet |
| Alexandria | 0.25 | 17.00T | 0.75 | 0.32½ | —20.00T— | | 9.00T | Fair |
| Algiers | 0.20 | 0.75 | 0.75 | 0.40 | —20.00T— | | 7.00T | Fair |
| Dakar | ..... | 14.50T | ..... | 12.00T | —20.00T— | | 10.00T | Good |
| Capetown | 12.00T | 12.00T | ..... | 10.00T | —12.00T— | | 9.00T | Very Good |
| Buenos Aires | ..... | 18.00 to 20.00T | ..... | ..... | 18.00 to 20.00T† | | 8.00 to 8.80T | Fair |
| Rio de Janeiro | ..... | 19.00 to 21.00T | ..... | 7.00 to 7.70T | 19.00 to 21.00T† | | 6.00 to 6.60T† | Fair |
| Pernambuco | ..... | 22.00T | ..... | 9.00T | —22.00T—† | | 8.60T† | Fair |
| Havana | 0.22½ to 0.27½* | 0.42½* | ..... | 0.22½* | 0.54* | 1.08* | 0.20* | Good |
| Vera Cruz | 0.25 | 0.40 | 0.45 | 0.25 | 0.52½ | 1.05 | 0.30 to 0.35 | Good |
| Valparaiso | ..... | 1.07 | ..... | 0.70 | 0.45 | 0.80 | 10.00T | Fair |
| San Francisco | ..... | 0.40 to 0.70 | ..... | 0.50 to 1.10 | .... | 2.50 | 0.55 to 1.00 | Good |
| Sydney | ..... | 18.00T | 2.50 | 18.00T | 18.00-24.00T | | 9.00-12.00T | Good |
| Calcutta | ..... | 16.00T | 0.60 | 12.00T | —16.00T— | | 10.00T | Fair |

T—Ton. ‡Per quarter of 480 lbs. †Landed. ††Heavy products limited in length. *Extra charge for wharfage.

| From North Pacific Ports to | Lumber Per m. ft. |
|---|---|
| San Francisco | $5.50 to 6.00 |
| South California | 6.00 to 6.50 |
| Hawaiian Islands | 10.00 to 10.50 |
| New Zealand | 15.00 to 16.00 |
| Sydney | 12.00 to 13.50 |
| Melbourne-Adelaide | 12.50 to 13.50 |
| Oriental Ports | 8.50 to 10.50 |
| Oriental Ports (logs) | 13.00 to 15.00 |
| Peru-Chile | 13.00 to 15.00 |
| South Africa | 17.50 to 19.00 |
| Cuba | 12.50 to 13.50 |
| United Kingdom | 80s to 90s |
| United Kingdom (ties) | 70s to 80s |
| Baltimore-Boston range | $12.50 to 15.00 |
| Baltimore-Boston range (ties) | Not quoted |
| Buenos Aires | 14.00 |
| **Flour and Wheat** | |
| Oriental Ports (net ton) | $ 4.50 to 5.50 |
| U. K. and Continent (gross ton) | 32s 6d to 35s |
| Mediterranean | 37s 6d to 40s |

### Principal Rates To and From United Kingdom

| | s | d |
|---|---|---|
| Grain, River Plate to United Kingdom | 34 | 6 |
| Coal, South Wales to Near East | 14 | 0 |
| Coal, United Kingdom to Buenos Aires | 12 | 6 |
| Manganese Ore, Poti to Philadelphia | $4.00 | |
| Pig iron, United Kingdom to New York or Philadelphia | 14 | 0 |
| Iron ore, Bilbao to Middlesbrough | 7 | 6 |
| Iron ore, North Africa to Philadelphia | 7 | 0 |

## Bunker Prices

### At New York

| | | Coal alongside per ton | Fuel oil alongside per barrel | Diesel oil alongside per gallon |
|---|---|---|---|---|
| April | 11, 1923 | $6.75@7.50 | $1.76½ | 5.10@5.35c |
| July | 11 | 5.50@7.00 | 1.76½ | 4.40@5.50c |
| Oct. | 11 | 5.25@6.85 | 1.51½ | 4.00@4.50c |
| Jan. | 9, 1924 | 5.25@6.50 | 1.41½ | 4.63@5.42c |
| April | 8 | 4.50@6.50 | 1.66½ | 5.51c |
| May | 8 | 4.50@6.25 | 1.81½ | 6.00@6.50c |
| June | 19 | 4.50@6.25 | 1.81½ | 5.51@5.65c |

### At Philadelphia

| | | Coal alongside per ton | Fuel oil alongside per barrel | Diesel oil alongside per gallon |
|---|---|---|---|---|
| April | 10, 1923 | $6.00@6.50 | 1.875 | 5.10 cents |
| July | 9 | 5.25@6.25 | 1.62 @1.73 | 4.35@4.60c |
| Oct. | 11 | 5.00@5.50 | 1.36½@1.51 | 4.12@4.36c |
| Jan. | 9, 1924 | 4.90@5.70 | 1.415 | 3.86c |
| April | 8 | 4.25@5.25 | 1.955 | 5.41@5.65c |
| May | 8 | 4.25@5.40 | 1.945 | 5.56@5.63c |
| June | 19 | 4.25@5.25 | 1.945 | 5.15@5.63c |

### Other Ports

| | |
|---|---|
| Boston coal, per ton | $6.78 |
| Boston, oil, f. a. s., per barrel | $1.37 |
| Hampton Roads, coal, per ton t.i.b. | 4.70@5.30 |
| Cardiff, coal, per ton | 20s |
| London, coal per ton | 28s |
| Antwerp, coal, per ton | 27s |

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# Late Decisions in Maritime Law

## Legal Tips for Shipowners and Officers

**Specially Compiled for Marine Review**

**By Harry Bowne Skillman**

***Attorney at Law***

LIABILITY for wrongfully libelling a vessel by mistake for a different vessel depends on whether or not the action was so unwarrantably brought, or brought with such little color or foundation, as to imply malice, or that gross negligence which is equivalent thereto. Applying this test, the court, in the case of Artinano v. W. R. Grace & Co., 286 *Federal Reporter* 702, held that where libelant, having a claim against a French sailing vessel, with auxiliary engines, and built of wood, growing out of a charter of such vessel and the loading thereon of freight of great value, libelled a Spanish steamship of the same name, which was built of steel and totally different in design, construction and appearance, it was guilty of such negligence as will support the recovery of actual damages.

* * *

"A contract to load and discharge cargo within a certain number of lay days binds the charterer to do so unless he has been prevented by the owners or by unusual and extraordinary events which were not to be anticipated. In other words," said the court in the case of SKOMVAER, 286 *Federal Reporter* 711, "the charterer takes the risk of all other interruptions. * * * The charterers say that the bark was not ready because on some of those days, while cargo was going into the fore and aft hatches, stiffening was being discharged from the main hatch. Sailing vessels can not stand up without stiffening necessary to the safety of both vessels and cargo, and when the charterers agreed to load and unload at the rate of 250 tons a day they must be taken to have known that at some period of the loading and discharging the bark would have to load or discharge her stiffening."

* * *

"Pilotage, generally speaking, is not a port charge at all. It is in the great majority of cases, and probably in all cases of South American and North Atlantic ports, the act of conducting a vessel from the high seas into a port. It is one single charge, not to be split up into so much for pilotage to the port, and so much for pilotage in the port." Applying this rule, it was held in the case of SKOMVAER, 286 *Federal Reporter* 711, that an agreement by a charterer in the charter party to pay all "port charges" at ports of loading and discharge, including towage, where Philadelphia was named as the port of discharge, did not render the charterer liable for towage from the Capes to Philadelphia, the same being at the charge of the vessel or owners.

* * *

"A dredge afloat, held by spuds to the ground, with water all around, may be the equivalent of an anchored vessel, and obliged to ring a bell in fog," it was held in the case of LEVIATHAN, 286 *Federal Reporter* 745, but this does not apply to a vessel ashore. The circuit court of appeals has held that vessels at the outer end of piers in fog should give some warning to other vessels navigating in the vicinity but not navigating or anchored signals. A distress signal would be ample for this purpose. If a vessel ashore and in distress needs to blow a signal of distress and is required to ring her bell, it would seem that other vessels in the fog would be embarrassed. They might well take such signals to be from two separate vessels and navigate accordingly; or, if the vessel ashore was only ringing a bell, approaching vessels might well take it for granted that she was afloat at anchor, with water on both sides and themselves run ashore in trying to pass on the shore side.

* * *

Under the merchant marine act of June 5, 1920, section 30, subsections P-T, the law presumes the owner's authority in one entrusted with a ship to procure supplies on the pledge of the ship, unless the owner has withheld his authority and the furnished knew it or by diligence could have ascertained it. The exception to the remedy which the law affords one furnishing supplies is operative only when by reason of some circumstances he either knew or by diligence could have ascertained that the person ordering the supplies was without authority of the owner which otherwise the law presumes.—ANNA E. MORSE, 286 *Federal Reporter* 794.

* * *

Contracts made for the construction of a ship or boat of any character is not within maritime jurisdiction, whether such ship or boat be in or out of water; but, when such vessel becomes complete and ready for her intended service, necessary supplies for such intended use are furnished under and subject to the maritime law. It was therefore held, in the case of MOUNTAINEER, 286 *Federal Reporter* 913, that where a gasoline launch had been constructed at another place to engage in purse seine fishing, for which a purse seine net was necessary, and had been brought by her master to a port near the fishing grounds, where the purse seine net was ordered, the contract to furnish appliances for the installation of the net was a maritime contract, entitling the furnisher thereof to a lien on the vessel.

* * *

A ship is not entitled to demurrage before the time she was ready to unload, nor after that date, where the delay was largely occasioned by the improper demand of the ship's agent for payment of the freight charges and demurrage before the discharge of the cargo, especially where the ship had a right under its bill of lading to discharge its cargo into lighters or on the dock at any time.—U. S. Shipping Board Emergency Fleet Corp. v. Banque Russo Asiatique London, 286 *Federal Reporter* 918.

* * *

In the absence of an agreement to the contrary, a shipper by lighters to a steamer was not liable for any delay caused by the steamer or her owners in failing to have the vessel ready to receive cargo or to provide room on the pier to receive such cargo.—Simmons Transportation Co. v. Alpha Portland Cement Co., 286 *Federal Reporter* 955.

* * *

One who has purchased cargo space on a designated vessel has the right to insist on shipment being made exclusively on that vessel, and cannot be required to ship on a substituted vessel. —H. C. Jones & Co., Inc., v. Atlantic Transport Co., Ltd., 284 *Federal Reporter* 310.

* * *

Under the maritime law a seaman injured is entitled to recover his wages, his maintenance and cure, and also indemnity for injuries caused by the unseaworthiness of the vessel. He cannot, however, recover of his employer for negligence of the surgeon provided by the employer unless the latter had knowledge that the surgeon was unskilled.—Bonam v. Southern Menhaden Corp., 284 *Federal Reporter* 360.

* * *

"The ship owes the seaman the duty of maintenance and care, and when there is negligence in the performance of this duty the ship and owner are liable in damages. Where a seaman is seriously injured, and there is no surgeon on the boat, it is the duty of the master to have him taken speedily to a hospital, where he can be treated." Applying these principles, it was held in the case of Unica v. United States, 287 *Federal Reporter* 177, that where a seaman had his wrist broken and his back injured by a fall, and his legs and internal organs were paralyzed, he was so seriously injured that the master should have taken him to a hospital at a port which would have resulted in but slight deviation from the vessel's course, or, if the seaman waived his right to be taken to that hospital, the master was negligent in failing to have him removed to a hospital at the ship's destination for six days after the arrival of the ship in that port.



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# Late Decisions in Maritime Law

## Legal Tips for Shipowners and Officers

**Specially Compiled for Marine Review**
**By Harry Bowne Skillman**
***Attorney at Law***

CITING the case of OSCEOLA, 189 U. S. 158, 23 *Supreme Court Reporter* 483, the court in the case of the SWIFTSURE, 286 *Federal Reporter* 689, stated that a vessel and her owners are liable, in case a seaman falls sick, or is wounded, in the service of the ship, to the extent of his maintenance and cure, and to his wages, at least so long as the voyage is continued; that the vessel and her owner are, both by English and American law, liable to an indemnity for injuries received by seamen in consequence of the unseaworthiness of the ship, or a failure to supply and keep in order the proper appliances appurtenant to the ship; that all the members of the crew, except perhaps the master, are, as between themselves, fellow servants, and hence seamen can not recover for injuries sustained through the negligence of another member of the crew, beyond the expense of their maintenance and cure; and that the seaman is not allowed to recover an indemnity for the negligence of the master, or any member of the crew, but is entitled to maintenance and cure, whether the injury is received by negligence or accident. That congress has paramount power to fix and determine the maritime law which shall prevail throughout the country, and, further, that in the absence of some controlling statute the general maritime law as accepted by the federal courts constitutes part of our national law applicable to matters within the admiralty and maritime jurisdiction, has been decided," said the court, "and is no longer open."

* * *

Though a statement made by the mate of a ship to seamen who refused to work while the vessel was in port could be construed as a discharge, the mate had no authority to discharge them, and such statement did not warrant their deserting the ship; and this is true though the statement might be sufficient to explain their failure to work thereafter until the differences between the seamen and the master of the ship were adjusted.—WILLFARO, 286 *Federal Reporter* 440.

* * *

"A salvage service is a service which contributes immediately to the preservation or rescue of property in peril at sea, * * * and the property must be saved by the parties claiming the compensation * * *. Taking passengers from a sinking ship, rendering no service in rescuing the vessel, is not a salvage service. * * * Prior to Salvage act of Aug. 1, 1912 (Comp. St. Secs. 7990-7994), saving life was considered a common duty of humanity and not for reward, * * * except for saving the life of a slave * * *. The Salvage act provides: 'That salvors of human life * * * are entitled to a fair share of the remuneration awarded to the salvors of the vessel * * *.' The evident intent of the statute is to place human life and property on a par to excite interest of salvors to save life, as well as ship and cargo, but to warrant award for saving life a salvage claim must exist against the ship or cargo. * * * For salvage service a party has two remedies; *in rem* against the property saved, or the proceeds, and *in personam* against the party liable for the salvage services.* * * The libelant having proceeded *in rem*, liability *in personam* can not be considered. * * * No service having been rendered in saving or rescuing the vessel, the vessel is not liable for salvage due for cargo, and on a libel against a vessel alone, no award can be made for salvage of cargo. United States mails on principle and public policy can not be considered as subject to seizure and sale, and salvage for rescue may not be impressed on the ship where no service is rendered rescuing the ship."—ADMIRAL EVANS, 286 *Federal Reporter* 442.

* * *

A hirer of a dredge, who furnished supplies and made repairs while using the dredge in the construction of a nonnavigable drainage canal, has no maritime lien, though the dredge was afterward found in navigable waters, as the contract was not maritime in its nature, and the services and supplies had no immediate relation to commerce by water or to navigation.—South Florida Dredging Co. v. American Steel Dredge No. 77, 286 *Federal Reporter* 454.

* * *

A carrier by sea, it was said in the case of Middleton v. United States, 286 *Federal Reporter* 548, is responsible in damages for unnecessary and unreasonable delay in transportation. Applying this rule, it was decided that, under a bill of lading issued April 15, for carriage of cotton from Charleston, S. C., to Jacksonville, Fla., delivery of the cotton in Jacksonville May 9 was not an unreasonable delay, it appearing that the parties understood that the shipment was not to be at once. However, it was further held that under a bill of lading for carriage of 500 bales of cotton from Charleston to Japan, with transshipment at Jacksonville to a steamship named or a substitute, the substitution of a large steamship, carrying a very large and diversified cargo, for delivery at different ports, which occupied in making repairs and loading 76 days after the cotton was ready for loading, and owing to a stranding and second transshipment it was not discharged at destination until eight and one-half months after such time, entitled the shipper to damages for unreasonable delay, in the absence of excusing circumstances. The measure of damages was held to be the difference between the value of the cotton at the place of delivery when it should have been delivered and the amount received therefor, at the proper valuation after actual delivery. It was further decided that expenses incurred in preparation and assertion of a claim for damages for unreasonable delay in shipment are not allowable to augment the damages.

* * *

Where services for which salvage was claimed amounted to little more than towage, and only ordinary work was required of the crew of the towing vessel, the entire award, it was held in the case of LEWIS BROTHERS, 287 *Federal Reporter* 143, will be decreed to the owners of the vessel. Even if the mate of the towing steamship, who had been placed on the schooner which was towed to safety and left on the schooner, performed services entitling him to share in the salvage award, he lost his right to salvage, it was further held, by grossly exaggerating the value of the schooner and cargo saved.

* * *

By the maritime law the owner of a vessel which is sunk, who does not intend to raise her, and who does not raise her, is not responsible for any damage caused to other vessels as a result of running into her. This law, it was decided in the case of Thames Towboat Co. v. Fields, 287 *Federal Reporter* 155, has not been changed by the statute of March 3, 1899, (30 STAT. 1148). The court further held that failure of the owner to remove a sunken vessel within 60 days was proof of her abandonment, and that the director general of railroads, who undertook to mark the position of the sunken vessel in a harbor, was liable for injury to another vessel, which ran into the wreck because of insufficient marking.

* * *

Where the bill-of-lading permitted the carrier to transship the goods and to deviate from the voyage, so as to go by any port or place en route or beyond, in any order, the ship was not liable for damages caused by delay in proceeding to a port 125 miles beyond the port of destination, and then transshipping back by another steamer, which arrived at the destination the following day, since the question under such a bill of lading is one of degree and reasonable conduct, and the deviation which occurred was not unreasonable.—EMELLA S. DE PEREZ, 287 *Federal Reporter* 361.



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# Business News for the Marine Trade

Potomac Steamship Co., Washington, has been incorporated for $100,000 by F. Herbert Bonnet, 621 Morris avenue, northeast, K. A. Collins, and others.

United Stevedoring Co., 23 Light street, Baltimore, has been incorporated for $30,000 by Warren A. Blake, William H. Stayton, and others.

Consolidated Navigation Co., 22 Light street, Baltimore, has been incorporated for $30,000 by Jonathan K. Voshell, 811 Munsey building, Warren A. Blake, and others.

Atlantic Boat Yard Co., Miami, Fla., probably will increase its capital from $20,000 to $100,000 for expansion purposes. E. L. Hess, 220 Southwest sixth street, is president.

Webster Marine Co., Miama, Fla., has been incorporated for $50,000 with J. O. Webster as president and Jennie S. Webster as secretary and treasurer.

Bay Shore-Brighton Excursion Co., Baltimore, has been organized with Charles Jackson, 110 East Lexington street, that city, as president. The company will operate a steamboat line from Baltimore to Bay Shore park.

Norfolk, Baltimore & Carolina Line, Inc., 133 West Main street, Norfolk, Va., has increased its capital stock from $25,000 to $50,000.

Atlantic Coast Ports Service Corp. has named the secretary of state in New York as its representative in its recent incorporation for $100,000. It will conduct a general wharfage business.

Blatt Steamship Co., has been incorporated in New York, with $20,000 capital, by H. C. Blatt, L. D. McDonald, and H. E. Rath, with Haight, Smith, Griffin & Deming, 27 William street, as attorneys.

Central Steamship & Exchange Agency, New York, has been incorporated for $10,000 by J. Pol, F. Schechter, with J. B. Glebocki, 56 St. Marks place, as attorney.

The Ohio River Transportation Co., Steubenville, O., has been incorporated for $50,000 to carry on a general river navigation and transportation business, by Oscar L. Marquet, Stephen J. Lashley, Margaret Jackman, Emmet M. Morrow, and Adda J. Buchanan.

Siemund Marine Electric Welding Co., New York, has been incorporated with $600,000 capital stock, with H. L. Siemund, W. Hedley and W. C. Steiger as incorporators. R. Conklin, 9 Pine street, is attorney.

I. Reese Co., New York, has been incorporated for $500 to supply ships and crews, with D. and J. Sandler as incorporators and J. A. Adler, 358 Fifth avenue, as attorney.

An appropriation of $1,190,000 will be made for constructing a fitting out pier at Puget Sound navy yard near Seattle, according to reports from Washington.

S. T. Hinton is in the market for machinery and equipment for a boat building plant at Huntsville, Ont.

Panamian Ecuadorian Steamship Line, New York, has been incorporated with $400,000 capital stock.

Lake & Canal Transfer Corp., Buffalo has been dissolved.

Gorry Transportation Co., Brooklyn, N. Y., has been incorporated with $15,000 capital to carry on a business of navigation, by F. H. and T. H. and J. F. Gorry, with E. H. Horstman, 371 Fulton street, as attorney.

Pastime Navigation Corp., New York, has been incorporated for $250,000 to conduct pleasure boat operations, etc., by D. J. Peterson, A. Carlson and O. Huhn, with C. M. Studin, 19 West Forty-fourth street, as attorney.

Stuart Towing & Transportation Co., New York, has been incorporated for $10,000 to do a lighterage business, by J. P. and A. M. Stuart and F. T. Desnoyers, with G. L. Robinson, 147 Nassau street, as attorney.

Metropolitan Boat Repair & Supply Corp., New York, has been incorporated for $15,000 by D. J. Dorothy, J. J. and W. T. Flannery, with F. J. Knorr, Albany, as attorney.

Indianhead Products Co., Wilmington, Del., has been incorporated with $16,700,000 capital to carry on general business in naval stores.

Penn Yan Boat Co., Penn Yan, N. Y., has increased its capital stock from $50,000 to $100,000.

Sound Motor Boat Service, New York, has been incorporated for $5000 for conducting navigation business, by H. Nelson, J. Garlick, and D. H. Jassy, with L. Halle, 165 Broadway, as attorney.

Ocean Wrecks Recovery Corp., New York, has been incorporated with 10,000 shares $5 par value preferred stock, and 25,000 shares $1 par common stock, and an active capital of $75,000, by H. Hirtler, C. E. Shannon and D. R. Haines, with I. M. Schwartz, 2 Rector street, as attorney.

The plant of the Charles W. Morse interests at Noank, Conn., was damaged by fire recently with heavy loss. Harry F. Morse is general manager of the yard, which was built about 70 years ago.

Lewis K. Thurlow has been appointed receiver for the involuntary bankrupt, the Boston, Halifax & Newfoundland Steamship Co.

Tough & Henderson, 53 Upper Ground street, Blackfriars, London, S. E. 1, tug owners, are taking bids for construction and delivery in the River Thames of a single crew river tug.

R. Blackmore & Sons, F. A. I., Bideford, England, estate agents, are offering for sale a newly equipped shipbuilding and ship repairing yards and drydock at Bideford and Appledore, North Devon, having 1610 feet of river frontage and covering about 6¼ acres. Buildings machinery and power plant are included in the properties to be sold.

The Astoria Shipping Co. has been reappointed subagents of the American-Hawaiian Line at Astoria, Oreg. Business of the Astoria line had been handled through its branch at Portland, Oreg.

General Steamship Corp., agent in the northwest for the Garland Line, has been named agent of the company at Los Angeles. S. L. Kreider will act as subagent in the southern California port.

## Business Changes

**Norton, Lilly & Co., steamship agents and brokers, have opened an office in the Union Trust building, Fifth avenue and Grant street Pittsburgh.**

* * *

**A sales organization to cover the Pacific states has been formed by the DeLaval Steam Turbine Co. under the direction of William Pullen. The Los Angeles office will be at 312 Union Oil building, 617 West Seventh street, in charge of Ivan E. Goodner. The San Francisco office will be at 531 Rialto building, Mission and New Montgomery streets, in charge of Mr. Pullen, assisted by Eck Baughn and Charles P. Markley. The northwestern district office will be at 1306–7 L. C. Smith building, Seattle, in charge of James Q. Osborne, assisted by F. A. Hurlbut.**

## New Trade Publications

BOILERS—Steel heating boilers of a special type designed to give complete combustion and smokeless gases are described in a catalog by the Birchfield Boiler Co., Tacoma, Wash. Tables of capacities and dimensions accompany the descriptions of the various units.

PUMPS—Centrifugal pumps for various uses and in many capacities manufactured by the Gould's Mfg. Co., Seneca Falls, N. Y., are illustrated in a bulletin by that company, calling attention to special publications giving full details of each sort of apparatus for those especially interested.

CENTRIFUGAL PUMPS—Double suction centrifugal pumps with horizontally split castings form the subject of a bulletin by the Morris Machine Works, Baldwinsville, N. Y. Construction and operating details are presented, typical performance curves show efficiency and the use of the pumps is outlined for handling various liquids.

FURNACE INSULATION—The Celite Products Co., Chicago, has published a bulletin on insulation of industrial furnaces and ovens, giving information on methods of insulating various types of furnaces and ovens and savings possible to accomplish. Insulation of boilers is also described in another bulletin now available.

WELDING AND CUTTING APPARATUS—Oxy-acetylene and oxy-hydrogen welding and cutting apparatus form the subject of an attractive booklet by the Burdett Mfg. Co., Chicago. The subject of welding is treated and the apparatus described, with illustrations of actual use for various purposes.

FANS—In two bulletins, the American Blower Co., Detroit, describes its disk and multipleblade fans in various forms and sizes for a wide range of uses. Data by which to determine the proper type and size are also given.

VACUUM PUMPS—A bulletin by the Chicago Pneumatic Tool Co., New York, devoted to a discussion of vacuum production gives a full description of the devices produced by that company for the exhaustion of air.

PETROLEUM—With an explanation that real facts, seasoned with a little fancy, are the basis of the book, the Tide Water Oil Sales Corp., New York, has covered ten million years of history as applied to the origin of petroleum. Issued originally in 12 monthly circulars, these successive chapters have been done into a book whose message is flavored with humor and will remain in mind better than the contents of ponderous tomes. It is interesting to know that of the ten millions of years since the paleozoic age the past 65 years mark practically all the progress of the world in the use of petroleum.



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